CATALOGUE

OF THE

University of the State of Missouri

FIFTY-FIRST REPORT

OF THE

CURATORS

TO THE GOVERNOR OF THE STATE.

1892-1893.

TRIBUNE PRINTING CO., JEFFERSON CITY, MO.

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PRINTERS & BINDERS
JEFFERSON CITY, MO.

UNIVERSITY CALENDAR.

1893.

September 7, 8, 9, 11	Entrance Examinations
September 12, Tuesday	All Departments Open
September 15, Friday	Reception of Y. M. C. A. and Y. W. C. A.
October 28, Saturday	Open Session of the Athenæan Society
November 11, Saturday	Open Session of the Union Literary Society
December 9, Saturday	Inter-Society Contest
December 16, Saturday	Open Session of the Bliss Lyceum
December 21, Thursday at 4 p. m	Christmas Holidays Begin

1894.

January 2, Tuesday at 9 o'clock a. m	Reopening
January 26 to January 29	Mid-Year Examinations
January 30, Tuesday	Second Semester Begins.
February 10, Saturday	Open Session of Young Ladies' Society
April 7, Saturday	Prize Declamation Contest
May 26 to June 4	Final Examinations
June 2, Saturday	Stephens Medal Contest.
June 3, Sunday	Baccalaureate Discourse
June 4, Monday.	Department of Law Closes.
June 5, Tuesday	Curators Meet.
June 5, Tuesday	Address before the Literary Societies
June 6, Wednesday	Oration before Alumni
June 7, Thursday	Commencement

SCHOOL OF MINES.

(AT ROLLA).

1893.

September 18, Monday, 10 a. m	Entrance Examinations
September 19, Tuesday	First Semester Begins
November 30, Thursday	Thanksgiving Holiday
December 22, Friday	Christmas Holidays Begin

1894.

January 2, Tuesday	Exercises Resumed
January 22, Monday	Mid-Year Examinations Begin
January 27, Saturday	Mid-Year Examinations Close
January 30, Tuesday	Second Semester Begins
February 22, Thursday	Washington's Birthday Holiday
May 28, Monday	Final Examinations Begin
June 5, Tuesday.	Final Examinations Close
June 7, Thursday, 10 a. m	Commencement

1893

JULY.

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1894

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HISTORICAL STATEMENT.

The University of the State of Missouri was located at Columbia, Boone county, on June 24, 1839, by commissioners appointed and empowered to select a site under an act of the General Assembly of February 8, 1839. To secure the location at Columbia, citizens of Boone county contributed the sum of $117,900. The main building was begun in 1840, and courses of instruction in Academic work were opened on April 14, 1841. A Normal department was established by act of March 11, 1867 The next year (1868), the State gave the University aid for the first time. The College of Agriculture and Mechanic Arts and the School of Mines and Metallurgy were made a department of the University by act of February 24, 1870—the School of Mines and Metallurgy being located at Rolla. To gain this addition to the University at Columbia, citizens of Boone county contributed $90,000. The Law department was opened in October, 1872; the Medical department in February, 1873; and the Engineering department in September, 1877. The Experiment Station was established under act of Congress of March 2, 1887. The Missouri State Military School was created a department of the University by act of the General Assembly in 1890. On January 9, 1892, the main building of the University was destroyed by fire. In the following March, the Legislature gave the University, for buildings and equipment, $236,577; this sum included insurance on the main building, $146,577, and a subscription of $50,000 from citizens of Boone county. In March, 1893, the fund for buildings and equipment was increased by a second appropriation of $264,000 ($250,000 for a building and $14,000 for grading, plumbing, etc), and a special appropriation of $25,000 additional was made for a new building at Rolla.

The foundation and the maintenance of the University rest on:

1. The old Seminary fund, $122,000 at 6 per cent;
2. The new Seminary fund, act of March 29, 1872, $100,000 at 5 per cent;
3. Congressional Land Grant fund, act of July 2, 1862, $317,000 at 5 per cent;
4. The United States Experiment Station fund, $15,000 per annum;
5. Fund from the act of Congress of Aug. 30, 1890, $17,023 (for the year 1892-3);
6. Fifty-two thousand acres of unsold land;
7. The Anthony W. Rollins Aid fund—interest on nearly $40,000;
8. The James S. Rollins Scholarship fund, $6,000 at 5 per cent;
9. Various gifts by individuals as foundations for prizes;
10. Tuition and other fees;
11. Deposits in the State treasury of proceeds of partition sales (unclaimed) at 5 per cent;
12. Endowment granted by the 36th General Assembly, $646,958.23 at 5 per cent;
13. Buildings, grounds, library and equipment, valued at $780,000 ($700,000 at Columbia and $80,000 at Rolla);
14. Appropriations for specific purposes by the Legislature of the State.

These appropriations have amounted to nearly $1,300,000 since March, 1891, but in this sum is included the amount entered above under 12. Besides providing for her University (which is the head of the Public School system) and for three Normal Schools, Missouri gives annually, for the support of her elementary schools, the third part of her total State Revenue fund. This aid from the State is added to the local school tax. These schools receive also the income at 6 per cent upon an endowment of $2,909,000, and at 5 per cent upon an endowment of $237,000.

NEW BUILDINGS.

The engraving accompanying this catalogue is an accnrate representation of the entire gronp of new University buildings. Of the buildings erected in former years, it shows the College of Agricnlture, and the President's house; but it does not show the Observatory, the Medical building, the three club-houses, the Agricnltural Farm buildings, or the Experiment Station. The view is taken from the northwest. As you enter the campus from the north, you pass the buildings as follows: on the left, 1, the Law School (new), 2, the Chemical Laboratory (new), 3, the President's honse (built some years ago), 4, the Musenm (new); on the right, 1, the Agricultnral College (built some years ago), 2, the Physics and Engineering building (new), 3, the Mechanic Arts building (new), 4, the Power house (new).

The new Academic Hall, as provided by the 37th General Assembly, will be located at the extreme sonth of the campus, and will rnn east and west, completely closing in the view. It will have an extreme length east and west of 319 feet. The depth of the building from north to south varies from 60 to 130 feet. The whole building will have three full stories besides a high basement, which may be counted as practically a fourth story. The tip of the dome is 180 feet above the level of the ground. The east end will contain the chapel. This will be an exact copy of the old chapel, which was one of the handsomest in America, and will seat comfortably 1,500 people. The west end will be given up to the Library, and to suites of rooms for the young women. The central portion of the building, 85×130 feet, will be devoted to lectnre rooms and offices. An effort will be made to have the chapel ready by the first of June, 1894.

The Law bnilding is 68½×114½ feet, and contains two stories and a basement. On the west front there is a center tower 88 feet high.

The Chemical building, located 50 feet south of the Law building, has a frontage of 132 feet on the quadrangle, and is 90 feet deep. It will have two stories and a basement.

The Museum bnilding has a frontage of 140 by a depth of 100 feet. It will contain two stories and a basement. The central portion is the Mnseum proper, 46×100 feet, entirely fire-proof, with floors of tile. The wings to the right and left of the Mnseum proper are for the Departments of Geology and Mineralogy on the one side, and of Botany and Biology on the other. Each of these wings will have eight rooms, in addition to a large lecture hall 28×40 feet.

The Physics and Engineering building has a frontage of 145 by a depth of 78 feet. It will have two stories and a basement, with tower at center of front 92 feet high It will be arranged for Physics and for Civil, Mechanical and Electrical Engineering. The building will contain 32 rooms, in addition to the two lecture halls 23×40 feet.

The Mechanic Arts building has a frontage of 108 and a depth of 117 feet. It consists of two stories and a basement. It has six shop-rooms, 40×40 feet; an exhibit hall, 25×40; two offices, 16×18; one drawing department, 40×40; store rooms, engine room, etc. The driving power is furnished by a 60-horse power Corliss engine that gets its steam by pipes from the Power house. The Power house is 72×86 feet, one story (21 feet) high. At the south end is the enormous brick smoke-stack, 100 feet high. It contains a plant of four boilers aggregating 400 horse power. All buildings will be heated from this plant by a system of brick tunnels, 6½ feet high by four broad, extending aronnd the quadrangle and connected with each building. Through these tnnnels all steam, water and gas-pipes and all electric light wires will be carried. All buildings have limestone foundations, extending to a height of five feet above grade line, with superstructure of pressed brick (trimmed witn cut stone), cornices of galvanized iron, and roofs of slate. All interior division walls are of brick, all ceilings are of cement laid on steel laths, and all floors are of hard maple polished.

REPORT OF THE BOARD OF CURATORS.

To his Excellency Wm. J. Stone, *Governor of the State of Missouri:*

Sir—In compliance with the provisions of section 8751 of the Revised Statutes of Missouri, 1889, the Curators of the University of the State of Missouri have the honor to submit the following report of the progress, condition and wants of the institution for the year ending June, 1893.

Separate reports of the various departments of the University exhibiting the course of study prescribed in each, and the number and names of officers and students, the amounts of receipts and expenditures for the year ending December 31, 1892, together with much other useful information, will be found in their proper order in the following pages of this report. For convenience, the following facts are here condensed:

Total number of students enrolled during the year at Columbia	600
Total number of professors employed during the year at Columbia	25
Total number of assistants employed during the year at Columbia	21
Receipts for the year ending December 31, 1892 (including building fund)	$335,365 41
Disbursements for the year ending December 31, 1892 (including building fund)	$329,717 31
Total number of students enrolled during the year at Rolla	114
Total number of professors employed during the year at Rolla	4
Total number of assistants employed during the year at Rolla	4

Act of March 24, 1892.

By the legislative act of March 24, 1892, the Thirty-sixth General Assembly appropriated in terms $237,500 "for the purpose of constructing, equipping and furnishing buildings and library for the accommodation and use of the State University." This appropriation is stated in the said act to consist of $40,000 transferred from the Insurance Department fund to the "building fund;" $50,000 contributed by the people of Columbia and Boone county, and $147,500 derived from insurance on main building and contents destroyed by fire January 9, 1892. In the settlement of the claim for insurance, however, the company were allowed $923 salvage on a part of the scientific outfit. Thus the insurance actually collected was only $146,577, and the appropriation actually available is $236,577 instead of $237,500. It is important that notice be taken of this.

Law Library.

The greater part of the Law library was saved from the fire. The damage to it has been repaired by the purchase of the lost volumes, and it is now completely restored and in quite as good condition as formerly. The restoration has cost $1234.38, taken out of the building fund.

General Library.

The General library was a total loss, except a few books that were out of the building at the time of the fire. Many books have since been donated by generous and sympathetic friends. These amount to about 1600 volumes.

The Board appropriated out of the building fund $10,000 for the purchase of new books. These have all been bought and delivered. These books, though not so numerous as the books of the old library, are believed to be more valuable, having been carefully and judiciously selected by the combined wisdom and practical judgment of the entire Faculty. The present collection is but a good beginning of a library. Nothing is more useful to attract students and make them contented than the opportunity for a wide and varied course of reading. The University library ought in the next ten years to contain 50,000 volumes.

Scientific Instruments.

The insurance derived from policies on scientific instruments amounted to $4447. This amount from the building fund has been reinvested in similar material. The Board of Curators also set apart a further sum from the building fund, to be invested in scientific aids and apparatus.

The modern sciences cannot be efficiently taught without proper equipment. The sciences are not only intellectual and theoretic; they are likewise material and practical. They deal with facts as well as ideas. Their conceptions are evolved in the exercise of delicate and dangerous powers, intimately connected with the business, commerce, travel, construction, manufacture, production, health, happiness and progress of the world. The student of the sciences goes directly from the class-room and laboratory to the application of his thoughts to the material wants and vast and complicated industries of mankind. He is trusted on his diploma, without question, as qualified practically for his profession. It is little less than a crime for the State to give him this reputation by its indorsement, without the full means for preparation to sustain it.

Conditions of Appropriation for Rebuilding.

The sum of $236,577 appropriated by the act of March 24, 1892, was made available for the erection of the new University buildings upon two conditions, viz.: That the people of Columbia or Boone county should pay to the Curators of the University the sum of $50,000, and that the town of Columbia should give to and file with the Board of Curators a bond, in the sum of $50,000, conditioned that said town of Columbia would furnish for the use of the University, and for fire protection, water in the manner and to the extent mentioned in said act. The said sum of $50,000 was so paid to the Curators, and by them paid to the State Treasurer. The said bond was duly executed and approved.

Since that time the town of Columbia has organized under the general law as a city of the third class, and has granted a franchise to W. T. Anderson and entered into a contract with him for the construction of a system of water-works, ample for all the purposes of Columbia. Operations have begun, and it is understood that the works will be completed during the summer of 1893.

Preparation for Building.

After the foregoing conditions were performed, the Curators proceeded, as rapidly as possible, to prepare for the erection of the new buildings. Their first duty was to employ an architect and superintendent. Mr. M. F. Bell, of Fulton, Mo., a gentleman highly accomplished in his profession, and possessing great practical skill in the management of such business, was selected, and has faithfully discharged his duties to the entire satisfaction of the Board of Curators. The character of the buildings, when completed, both in their internal construction and adaptation to their special purposes, as well as for the pleasing effect of the architectural designs, is relied upon as a justification of his seleetion. His estimate of the probable cost of the buildings has given almost accurate information to the Board, so as to guide them in their plans for the general improvement and equipment. His supervision of the work as it has progressed has been careful and unremitting.

Kind of Buildings.

Two courses of action seemed from the beginning open to the Curators, viz.: to erect a main building, or to erect a number of department buildings. On consideration it was ascertained that the amount appropriated was insufficient for the erection and equipment of a main building with any fire-proof qualities, and further, that greater accommodations could be secured, and more pressing wants met for the present, by several structures than by one; therefore, after mature consideration, it was determined to erect a system of department buildings.

In devising the system, the whole subject and all the conditions were thoroughly canvassed, and future buildings and improvements considered, so that convenience and economy might be secured and harmony of design attained now and hereafter The number and capacity of the present buildings of course would be limited by the provisions of the act, which required that no building or buildings should be begun which could not be finished within the appropriation. It was found possible under this limitation to erect six buildings, viz.: a boiler and engine house for heating and power, a Manual Training building, a Physics and Engineering building, a building for Biology and Geology combined with a Museum, a Chemical Laboratory and a Law building. A comprehensive campus plan was surveyed and adopted upon the idea of a quadrangle or elongated court, 300 feet wide from east to west and extending from north to south. The new buildings are arranged on each side of the quadrangle, the Agricultural college building being one of the group. Future like buildings can be in harmony with these. The magnificent and imposing columns of the old building stand in the center of the court, and will be left standing—a sacred ruin and sad memorial to the lives of the old students, a monument of progress to the new.

As soon as possible after these preliminaries had been arranged, the architect prepared plans for the three first-named buildings; bids were advertised for and opened on June 21, 1892, and the contract for their erection awarded to Fred. H. Binder, of Jefferson City, for the sum of

$69,085. Plans for the remaining three buildings being prepared, bids were advertised for and opened on July 21, 1892, and the contract for their erection awarded to Theo. Lacaff, of Nevada, Mo., for the sum of $102,700.

Approval of Plans.

All said plans, specifications and detail drawings and contracts were duly approved by the Executive Board, and by the Governor, Secretary of State and State Auditor. In like manner, all plans, specifications and detail drawings and contracts for any work or material (not being equipment), to be paid for out of the building fund, have been duly approved.

Law Building.

The Law building is $68\frac{1}{2} \times 114\frac{1}{2}$ feet, and contains two very high stories and a basement. It has 12 rooms and offices, two large lecture rooms and a capacious library room. It was finished and ready for occupancy by the 1st of February. On the west front is a tower 88 feet high. The contract price is $31,000.

Chemical Building.

The Chemical building has a front on the quadrangle of 132 feet, and is 90 feet deep. It will have two stories and a full basement. It is ready for the roof, is to be completed by August 15, 1893, and the contract price is $28,000. This building is so planned as to meet every convenience and the highest scientific requirements of the most modern chemical instruction, investigation and experiment. There is nothing in the West that will exceed it in useful arrangements and appointments.

Biology and Geology with Museum.

This building will have a frontage of 140 feet by a depth of 100 feet. It will contain two stories and a basement. The central portion is the Museum, 46×100 in first and second stories, entirely fire-proof, with floors of tile. The wings to the right and left of the Museum are for the departments of Geology on the one side and for Biology on the other. Each of these wings will have eight rooms, in addition to a large lecture hall. The contract price for this building is $43,700. It is to be finished September 15, 1893.

Physics and Engineering Building.

The Physics and Engineering building has a frontage of 145 by a depth of 78 feet. It will have two stories and a full basement, with a tower at the center of the front 92 feet high. It will be arranged for Physics and Civil, Mechanical and Electrical Engineering. It will contain 32 rooms, in addition to the two lecture halls, 23×40 feet. The contract price is $30,000. This building is completed.

Manual Training Building.

The Manual Training building has a frontage of 108 feet by a depth of 117 feet. It consists of two stories and a full basement. It has six shop-rooms 40×40 feet; an exhibit hall 25×40 feet; two offices 16×18 feet; one drawing-room 40×40 feet; two class-rooms 18×22 feet, besides store-room, engine-room, lavatories, etc. The driving power of the

machinery is a 90-horse power Corliss engine. The contract price of the building is $27,000. This building has been completed and occupied since February. When in full operation it will accommodate 400 students by classes, 24 in a class, and two hours to a class each day.

Power House.

The power house is 72×86 feet, one story (21 feet) high. At the south end is the enormous brick smoke-stack, 100 feet high, with solid stone foundation 13 feet in the ground. It has room for a coal supply for two months. It has a commodious work-shop and store-room. It cost $12,305, and is finished. It contains a plant of four boilers, all new, aggregating 400 horse power. One of these is designed to furnish steam power to the engine at Manual Training building, and the other three steam for heating all the buildings. Sunk to a depth of ten feet is a basement room for receiving tank and pump. Out of this basement room goes

The Tunnel.

The tunnel is built of hard brick laid in cement, with brick floor, overlaid with cement. It is 6 feet 6 inches in the clear in height, and 4 feet wide inside measure. Iron stays are fixed on the sides at intervals to support the steam and return pipes. The tunnel at points is 21 feet under ground. Its whole length, including turnouts, is 1418 feet. Its total cost was $11,742.18. It extends from the power house diagonally into the quadrangle, where it forks. One branch goes due north on a line twelve feet from the line of the buildings to the Agricultural College building. The other branch goes due east to the Museum building, then turns due north to the Law building. Opposite each building is a turnout for the inlet of steam pipes. The steam pipes extend from the boilers throughout the length of the tunnel, as do also the return pipes. There is a gradual fall fron the extremes back to the power house, so that all condensation returns by gravity into the receiving tank and is pumped again into the boilers. Thus all the buildings are to be heated from one boiler plant. The convenience of the system is admirable, and the saving in fuel and service will soon pay for the whole outlay. One engineer and one fireman can ordinarily do the entire work. The tunnel is equally convenient to the position for the main building, and can be extended to any other buildings that may in future be erected upon the campus or adjacent to it.

Sewers.

A complete sewer system has also been planned for the whole system of buildings for the present and future. It is comprehensive enough to cover all cases, and can be indefinitely extended over the campus. The present extension being put in is for all the new buildings and the main building, and will cost $2465, the contract price.

Gas-fitting and Plumbing.

The gas-fitting and plumbing in the Manual Training and Law buildings have been completed. Similar work in the Physics and Engineering and Chemical buildings is now in progress. It is intended that all this material and work shall be of the best quality.

Academic Hall.

The 37th General Assembly appropriated $250,000 for the construction of a main building, and for furnishing the same with heat, light and water. At a meeting of the Board of Curators held in May, a general plan was adopted, and it was decided to call this building the "Academic Hall." It will have an extreme length east and west of 319 feet. The depth of the building from north to south varies from 60 to 130 feet. The whole building will have three full stories and a high basement, which may be counted as practically a fourth-story. The tip of the dome is 180 feet above the level of the ground. The east end will contain the chapel. This will be an exact copy of the old chapel, which was one of the handsomest in America, and will seat comfortably 1500 people. The west end will be given up to the Library and to suites of rooms for the young women. The central portion of the building—85 by 130 feet—will be devoted to lecture-rooms and offices. An effort will be made to have the chapel ready by the first of June, 1894.

New Departments.

The rapid expansion of the University has caused the establishment of the following new departments: (1) Mechanical Engineering. (2) Electrical Engineering. (3) Philosophy.

Professor C. W. Marx, Superintendent of Department of Mechanic Arts, was elected to the chair of Mechanical Engineering, and Professor Wm. Shrader was chosen to the chair of Electrical Engineering. The chair of Philosophy has not yet been filled.

The University in State Economy.

There are four essential elements of University success and usefulness, viz.: Faculty, buildings, equipment and students. Of these, the corps of instruction is first in order and force. High character, strong intellect, comprehensive, accurate learning, practical wisdom, correctness of purpose and sincere love of their work are the qualities demanded. The selection of the professors must depend upon the good judgment of the managing authority, with the means placed at their disposal. In selecting a Faculty, it has been the aim of the Curators to make such a reputation for the University that a professorship in any of its departments shall be not only a guaranty of intellectual force and scholarship, but, what is of far greater moment, evidence of moral worth and irreproachable character. Should any fail in this regard, it would be a cause for displacement without hesitancy. Our present Faculty we believe worthy the utmost confidence. They are presided over by a President of the most eminent moral qualities and irrepressible intellectual force; a man of noble character, high sentiment, broad views of life and destiny, and under all conditions guided by the greatest of all purely mental endowments, good common sense. The Faculty are able, learned and laborious. Amid the wreck and waste of the fire, in rented rooms and with depleted accommodations, they, by their combined effort and great excellence of work, have kept the University intact and held its student

corps to a higher number than when the great main building stood with all its comforts, conveniences, equipment and libraries.

Facts are better than words. No commendation could add to the testimony of these results. They fully justify the State for the outlay it has made or may make in supporting their endeavors by providing amply all needed facilities. To supply buildings and equipment is the office of the State, and this duty will be discharged according to its ability and its appreciation of higher education. Students in any number will not be wanting, where the conditions are equal to the necessities of modern education. There is no investment which a State can make equal to a great University. There is no advantage to a people so noble in itself, so grandly enduring in results, so far-reaching and irresistible in influence. It is at once a monument to constitutional vigor and character, and a mighty controlling power. A University is the laboratory of the highest thought, the training school of genius. It gathers together and utilizes the mind-power of a people, conferring upon it the strength of trained exercise, the momentum of a compact moving body, the readiness of practiced and accurate drill, the armor of broad and liberal learning.

The most real wealth of a State is cultivated intellect, neither diminished by use, damaged by fire nor wasted by flood. The University supplies to the State an accumulation of mental equipment and reserved power ready for any emergency of statesmanship, war or scientific application; and this necessity for provident preparation is constantly growing. The State which neglects it must eventually yield to that which supplies it. True, here and there some great minds have and will continue to develop without special training; but these are exceptions, and even in these isolated cases it will be found that such minds are the production of the institutions under which they live. Taking no notice of the forces in society that have strongly impressed and characterized them, the world calls them self-made; but they are the genuine offspring of their time The prepotency of racial features and political, moral and intellectual conditions and natural environment are too often in these cases overlooked.

The influences of universities are not alone direct upon their students, but also strongly indirect upon the people. They exercise a potent secondary influence almost boundless in its beneficence. Through the popular lore of the land, they mingle the strength, precision and ambition of a higher education. They thus uphold the purpose of the people, and stimulate them to more thorough mental preparation in reading, study and attention to greater problems in government, business and scientific methods.

The sciences are now everywhere regarded as the friends of the most common and practical concerns of every-day life. They are no longer confined to the laboratory as curiosities of the few, but have gone out to the shop, the field and the factory. The University is the demonstrator and teacher of their uses; the people are the recipients of their benefits. The light which the University spreads is diffused for all. It reaches with gentle touch every shady place in life.

Universities are the steadfast friends of the public schools. Thomas Jefferson created the University of Virginia; he also was the author of the school system of Virginia. The interest of the University and the public school is one. They are complements the one of the other. They cannot be divorced without immediate and permanent injury to both. In our admirable constitution they together constitute the public school system. Both are made subject to the same State control and entitled to the same conscientious care and adequate support. The University and the public school in Missouri are of the same blood. They differ only in their offices. The University is not an interest separate from the popular interest. Its teachings are not contrary to the truths taught in the public schools. All truth is of one essence and agrees with itself. The public schools deal with facts and elements, the University with the reason and principle of things, and scientific investigation and experiment, whereby the bounds of human knowledge are enlarged for all, finding its speedy way into the smallest concerns of practical life. This is now the best thought of the civilized world. In Germany her great universities at Berlin, Leipsic, Gocttingen and Strassburg are not more distinguished for higher learning than are her minor schools for efficiency and usefulness among the people. And who for a moment would assert that Cambridge and Oxford had been detrimental to the commons in England—two forces that more than any others have supported the English dominion by endowing the English mind? For these two universities it is claimed that "they carried the English flag around the world."

With equal pride all Americans regard Yale, Harvard, Dartmouth, Bowdoin or Princeton. And shall not Missourians love and cherish their University, now rapidly growing in power and usefulness? Certainly Missourians cannot be so short-sighted as not to do all they can for so grand an interest.

Their public school system is unsurpassed on the continent. They will make their University correspondingly great and successful. In every age great scholars, profound thinkers, overmastering intellects, wonderfully accurate scientists and ingenious inventors are a necessity, but especially so in this age of surprise, newness and mighty progress. The energies with which the world once wasted itself in war are now turned to intellectual dominion and the triumphs of learning. It is not the mighty tread of nations sounding along the highway that leads to conquest now, but the silent hosts of thought and the viewless march of mind. The camp of civilization is pitched in the lecture-room and in the laboratory. The standard of the university is set up where once the eagles of the legion stood.

The thoughts of great minds come to the world like the benedictions of Providence. One thought of Galileo restored to human knowledge the round world and made the discovery of America possible. The announcement by Newton of the law of gravitation gave to mankind the key of material progress as well as astronomical discovery and revelation. The inductive system of philosophy by Bacon freed the human soul from the insufferable tyranny of cant and dogma, opening to it the avenues of

true science and true methods of scientific investigation, by leading through factual knowledge to a generalization that might disclose the secret principle and basis of things. The declaration by Thomas Jefferson "that all men are created equal" became instantly the announcement of liberty to all mankind.

A single thought has often created within an hour untold wealth, where toil and industry failed or were at a great disadvantage. Eli Whitney, by a simple application of reason to material, enabled the American people to accumulate wealth at the rate of more than ten millions of dollars a day. Samuel Howe, by reversing the needle and putting the eye at the point, freed the women of the world from industrial slavery, and made the "Song of the Shirt" the mere dream of poesy. The invention of the reaper and harvester by McCormick, and other field labor-saving machinery by others, has increased the agricultural production of America a thousand fold, and brought a comfort to toil incalculable in money and unlimited in time. There is a wealth of soil, but a greater wealth of mind—an evanescent glory of "circumstance," but an enduring glory of intellect—that lives on to heighten the fame and brighten the deeds of a people even when they have passed away. Missouri lies well in climate and position. Her rivers are broad and her fields are fertile. But she will not be remembered for these. Such she was before we came to possess her advantages. Her fame and character must rest upon the achievements of her citizens. It is not nature lives in history, but man. It is not wealth of soil that endures, but riches of heart and brain.

The University stands a mere point by the mountain height, but the sun shines not half so bright on the one as glory sheds its luster upon the other. One single great man developed in the University were cheap at a million dollars and twenty years of time. We pay the highest tribute to the noblest souls, and every age has felt and owned the mystic power of the matchless intellect that towered above its times and cast its influence above and beyond them far out to the future. When Macedon's tyrant lived, the people of the Peninsula met to ask: "What is Philip doing?" And to-day all England awakes to inquire concerning the health and latest thought of Gladstone. Mind is empire. At last, mind rules the world and holds in its grasp the everlasting fame and destiny of nations. Missouri has a noble people. She is settled by an intellectual race, marked by high ambition and enduring purpose. Her citizens possess in a singular degree energy, enterprise and a free and noble spirit. They are brave, chivalrous, faithful and true. Not to afford to such a people the means of the highest intellectual development possible is little less than a crime. It is an irreparable injury to the present and a blight upon the future. The youth of Missouri have a claim upon their State for the advantages of a University equal in all its appointments to the best in the country.

Respectfully submitted.

G. F. Rothwell,

President of the Board of Curators.

CORPORATION.

THE BOARD OF CURATORS.

HON. B. M. DILLEY	Hamilton	Term expires Jan. 1, 1895.
HON. GARDINER LATHROP	Kansas City	
HON. B. R. CAUTHORN	Mexico	
HON. J. R. RIPPEY	Glenwood	Term expires Jan. 1, 1897.
HON. G. F. ROTHWELL	Moberly	
PROF. C. M. WOODWARD	St. Louis	
GEN. E. Y. MITCHELL	Rolla	Term expires Jan. 1, 1899.
HON. R. B. OLIVER	Jackson	
HON. JOHN S. CLARKSON	Columbia	

Officers of the Board.

HON. G. F. ROTHWELL ..... President
HON. B. M. DILLEY ..... Vice-President
J. G. BABB, Secretary.
ROBERT B. PRICE, Treasurer.

THE SCHOOL OF MINES.

Executive Committee.

GEN. E. Y. MITCHELL, Chairman ..... Rolla
JOHN S LIVESAY, Esq ..... Rolla
HON. CHARLES C. BLAND ..... Rolla
W. M. SMITH, Secretary.
D. W. MALCOLM, Treasurer (office at Rolla).

Board of Visitors.

HON. E. H. NORTON ..... Platte City
HON. NORMAN J. COLMAN ..... St. Louis
HON. JOHN F. WILLIAMS* ..... Macon
HON. F. F. ROZZELLE ..... Kansas City
HON. G. B. ROLLINS ..... Columbia

*Deceased.

FACULTY OF THE UNIVERSITY.

(Excepting those of the President and the Chairman of the Faculty, the names are printed in the order of appointment.)

RICHARD HENRY JESSE, LL. D.,
President.

JAMES SHANNON BLACKWELL, M. A., Ph. D.,
Chairman of the Faculty.

JOSEPH G. NORWOOD, M. D., LL. D.,
Emeritus Professor of Physics.

PAUL SCHWEITZER, Ph. D.,
Professor of Chemistry.

ANDREW WALKER McALESTER, A. M., M. D.,
Professor of Surgery and Diseases of Women and Children.

WOODSON MOSS, M. D.,
Professor of Anatomy and Practice of Medicine, Secretary of the Medical Faculty.

JAMES SHANNON BLACKWELL, M. A., Ph. D.,
Professor of Semitic and Modern Languages.

WILLOUGHBY CORDELL TINDALL, M. S.,
Associate Professor of Mathematics.

JOHN CARLETON JONES, A. M., Ph. D.,
Professor of Latin Language and Literature.

EDWARD ARCHIBALD ALLEN, Litt. D.,
Professor of English Language and Literature.

WILLIAM BENJAMIN SMITH, A. M., Ph. D.,
Professor of Mathematics and Astronomy.

†WILLIAM WALLACE CLENDENIN, S. M., A. M.,
Assistant Professor of Geology and Mineralogy.

†HENRY CAPLES PENN, A. B.,
Assistant Professor of English Language and Literature.

GEORGE DANA PURINTON, A. M., M. D., Ph. D.,
Professor of Biology and Curator of the Museum.

GARLAND CARR BROADHEAD, M. S.,
Professor of Geology and Mineralogy.

JAMES AULL YANTIS, LL. B.,
Resident Professor of Law.

†Absent for the session of 1892-93.

†BENJAMIN FRANKLIN HOFFMAN, L. M.,
Assistant Professor of Modern Languages.

MILLARD LEWIS LIPSCOMB, A. M.,
Professor of Physics.

*WALTER B. RICHARDS, M. A.,
Professor of Mathematics.

EDWARD D. PORTER, M. A., Ph. D.,
Professor of Agriculture, Dean of the College of Agriculture and Mechanic Arts, and Director of the Experiment Station.

*AUSTIN LEE McRAE, Sc. D.,
Professor of Physics.

ALEXANDER MARTIN, A. M , LL. D.,
Professor of Law and Dean of the Law Faculty.

WILLIAM GWATHMEY MANLY, M. A.,
Professor of Greek Language and Literature.

MILTON UPDEGRAFF, M. S., B. C. E.,
Assistant Professor of Mathematics and Astronomy, and Director of the Observatory.

JOSEPH PHILIP BLANTON, A. M.,
Professor of Theory and Practice of Teaching.

JOHN MILLER BURNAM, A. M., Ph. D.,
Assistant Professor of Latin Language and Literature.

GEORGE ARMSTRONG WAUCHOPE, M. A., Ph. D.,
Assistant Professor of English Language and Literature.

CHRISTIAN WILLIAM MARX, B. E.,
Professor of Mechanical Engineering and Superintendent of Mechanic Arts.

JOHN WALDO CONNAWAY, M. D. C., M. D.,
Professor of Physiology (Human and Comparative).

WILLIAM SHRADER, B. S , Ph. D.,
Professor of Electrical Engineering and Assistant Professor of Physics.

*ELMO G. HARRIS, C. E.,
Director of School of Mines and Professor of Engineering.

FREDERICK HOMBURG, B. S.,
Assistant Professor of Chemistry.

JOHN DAVIDSON LAWSON, B. C. L., LL. D.,
Professor of Law.

‡PAUL EVANS, M. D.,
Professor of Histology and Bacteriology.

CHARLES ALBERT KEFFER, M. H.,
Professor of Horticulture.

‡ALEXANDER MAITLAND, C. E.,
Assistant Professor of Engineering.

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*School of Mines and Metallurgy at Rolla.
† Absent for the session of 1892-93. ‡ Resigned.

FREDERICK CHARLES HICKS, Ph. D.,
Professor of History and Political Economy.

JOHN PICKARD, A. M., Ph. D.,
Associate Professor of Greek and Archæology.

LEO WIENER,
Assistant Professor of Modern Languages.

EDWIN WINFIELD BOWEN, A. M , Ph. D.,
Assistant Professor of English Language and Literature.

RICHARD HADEN HOOD, C. E.,
Professor of Civil Engineering.

SAMUEL A. SMOKE (Lieutenant U. S. Army),
Professor of Military Science and Tactics.

*WILLIAM H. SEAMON, B. A. S ,
Professor of Chemistry and Metallurgy.

_____
Professor of Philosophy (to be appointed soon).

_____
Professor of Art.

_____
Professor of Elocution

*PAUL J. WILKINS, B. S.,
Instructor in Academic Department.

†SILAS DINSMOOR,
Assistant in Chemistry.

WILLIAM RUFUS DODSON, S. B ,
Assistant in Biology.

JOSEPH FRANCIS PAXTON, A. B.,
Assistant in Latin.

*THOMAS LEWIS RUBEY, A. M ,
Instructor in Academic Department.

*DANIEL C. JACKLING, B. S.,
Assistant in Chemistry and Metallurgy.

CHARLES BEMIS REARICK,
Assistant in Drawing and Mechanic Arts.

MELVILLE SINCLAIR KING, M. Acc'ts,
Instructor in Commercial School.

WILLIAM RICHARD GENTRY, L. B.,
Assistant in Modern Languages.

GEORGE LINCOLN BROWN, S. B ,
Tutor in Mathematics.

JEAN AUGUSTA SHAEFER,
Tutor in Mathematics.

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*School of Mines and Metallurgy at Rolla

† Absent for the session of 1892-1893.

MARQUIS HARTWELL LOCKWOOD,
Tutor in Mineralogy and Physics.

CLIFFORD LeROY HARE, B. S.,
Assistant in Chemistry.

NORMAN COLMAN RIGGS,
Tutor in Mathematics.

FRANK BLAIR WILLIAMS, S. B ,
Tutor in Mathematics.

HOWELL VAN BLARCOM,
Assistant in Mechanic Arts.

ISIDOR LOEB, S. B.,
Tutor in History.

*CLIFFORD B. SPENCER,
Assistant in Engineering and Mathematics.

*THOMAS GRAYSON POATS,
Instructor in Shop-work and Mechanical Drawing.

SUMMARY.

Professors	29
Associate Professors	2
Assistant Professors	10
Assistants	9
Instructors	4
Tutors	6
Total	60

OTHER OFFICERS.

Mrs. KATE HENDRICKS,
Matron

J. G. BABB,
Proctor of the University.

Miss KATHERINE P IGLEHART,
Secretary of the University

JOHN WATSON MONSER,
Librarian.

*THOMAS LEWIS RUBEY, A. M ,
Secretary of the Faculty.

JOSEPH FRANCIS PAXTON, A. B.,
Secretary of the Faculty.

Gen. J. B. DOUGLASS,
Superintendent of Unsold College Lands.

*W. M. SMITH, *Proctor.*

*Mrs. T. L. RUBEY, *Librarian.*
For officers of Experiment Station, see p. 39.

*School of Mines and Metallurgy at Rolla.

DEPARTMENTS OF THE UNIVERSITY.

I. ACADEMIC.

A. LANGUAGE.

I—English.
II—Latin.
III—Greek.
IV—Modern.
V—Semitic.
VI—Sanskrit.
VII—Comparative Philology.

B. SCIENCE.

VIII—Political Science.
IX—Philosophy.
X—Mathematics and Astronomy.
XI—Physics.
XII—Chemistry.
XIII—Geology and Mineralogy.
XIV—Biology.

II. PROFESSIONAL.

XV—1. Agriculture and Mechanic Arts.
XVI—2. Normal Instruction.
XVII—3. Law.
XVIII—4. Medicine.
XIX—5. Engineering (Civil, Mechanical and Electrical).
XX—6. Military Science and Tactics.
XXI—7. Art.
XXII—8. Elocution.
XXIII—9. Mining and Metallurgy.

ACADEMIC DEPARTMENTS.

ACADEMIC FACULTY.

(Excepting those of the President and the Chairman of the Faculty, the names are printed in the order of appointment.)

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Assistant Professor of Modern Languages.

† Absent for the session of 1892-93.

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WILLIAM RICHARD GENTRY, L. B.,
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JEAN AUGUSTA SHAEFER,
Tutor in Mathematics.

CLIFFORD LEROY HARE, B. S.,
Assistant in Chemistry.

NORMAN COLMAN RIGGS,
Tutor in Mathematics.

FRANK BLAIR WILLIAMS, S. B.,
Tutor in Mathematics.

ISIDOR LOEB, S. B.,
Tutor in History.

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†Absent for the session of 1892-93.

I. Department of English.

EDWARD A. ALLEN, Professor. { †H. C. PENN, G. A. WAUCHOPE, E. W. BOWEN, } Assistant Professors.

The following courses are offered:

1 and 2. The principles of written discourse. Exercises and themes. Four sections, two semesters, two hours a week, Wednesday, Friday (Freshman). Professors WAUCHOPE and BOWEN.

Clark's Rhetoric; Lectures.

3 and 4. The History of English Literature, (1) from its beginnings to the Restoration, (2) from the Restoration to the Present; and the study of masterpieces of representative authors from Chaucer to Tennyson. Parallel readings. Essays on literary and historical subjects. Two semesters, three hours a week, Tuesday, Thursday, Saturday (Sophomore). Professor ALLEN.

Lectures; Nicoll's Landmarks of English Literature; English Classics.

Useful for reference: Stopford Brooke's English Literature; Greene's Short History of the English People; Minto's Manual of English Prose; Ward's English Poets; Saintsbury's Elizabethan Literature; Gosse's Literature of the Eighteenth Century; Stedman's Victorian Poets. These books are recommended for purchase.

5. History of the English Language. Theses. *First semester*, three hours a week, Tuesday, Thursday, Saturday (Junior). Professor ALLEN.

Lectures; Lounsbury's History of the English Language; Sweet's Anglo-Saxon primer.

6. Study of modern Prose style, based upon the masterpieces of best authors. Essays. *Second semester*, three times a week, Tuesday, Thursday, Saturday (Junior). Professor ALLEN.

Genung's Rhetorical Analysis; Prose Authors.

Required for L. B., courses 1, 2, 3, 4, 5 and 6; for S. B., courses 1, 2, 3, 4 and 5; for A. B., courses 1, 2, 3 and 4.

ELECTIVE COURSES.

7 and 8. Anglo-Saxon Prose and Poetry. *First and second semesters*, two hours a week, Wednesday, Friday (Senior). Professor ALLEN.

Sweet's Anglo-Saxon Reader; Earle's History of Anglo-Saxon Literature.

9. Middle English. *Second semester*, two hours a week, Wednesday, Friday (Senior). Professor ALLEN.

Morris and Skeat's Specimens of Early English, Part II.

10. Anglo-Saxon Grammar (Comparative). *Second semester*, two hours a week, Tuesday, Saturday (Senior). Professor BOWEN.

11. Gothic. *Second semester*, two hours a week (Senior). Professor WAUCHOPE.

Wright's Gothic Primer. For reference: Braune and Balg.

12. Anglo-French. *First semester*, two hours a week. Knowledge of Latin and French necessary. Professor ALLEN.

13. Chaucer. *First semester*, two hours a week. Professor ALLEN.

14. Shakspere. *First semester*, two hours a week. Professor BOWEN.

†Absent for the session of 1892-93.

15. The Elizabethan Drama. *First semester*, two hours a week. Professor WAUCHOPE.

Thayer's Best Elizabethan Plays.

16. Principles of English Versification. One hour a week.

17. Course 5 (Lectures on the English Language) is open, as a Junior elective, in the A. B. course. *First semester.*

18. Course 6 (Modern Prose) is open, as a Junior elective, in the A. B. and S. B. courses. *Second semester.*

A graduate course is provided for students desiring to carry on further their studies in English. The following will indicate in a general way the work done: Beowulf (Harrison and Sharp); Cynewulf (Kent); Cook's-Siever's A. S. Grammar; Ten Brink's Literature; Skeat's Principles of English Etymology.

A special medal, known as the "McAnally medal," is offered for the best essay, thesis or poem by members of the Senior class competing under certain rules laid down by founder of the prize. Subject for 1893-94: James Russell Lowell.

Enrollment of students in the English department, 1892-93: Collegiate (required and elective), 246; Preparatory, 198.

II. Department of Latin Language and Literature.

J. C. JONES, Professor; J. M. BURNAM, Assistant Professor; J. F. PAXTON, Assistant.

The subjects taught in this department are the Latin Language and Literature, the Geography, Mythology, Antiquities and History of the Romans.

1. Sallust. *First semester*, daily at 9 (Freshman).

Text-books: Herbermann's Sallust, Allen and Greenough's Grammar, Allen's Prose Composition, Allen's History of Rome.

2. Cicero (Orations). *Second semester*, daily at 9 (Freshman).

Text-books: Kelsey's Cicero, Allen and Greenough's Grammar, Allen's History of Rome.

The aim of the above courses is to give the student facility in reading Latin prose. Daily practice in sight-reading will be given during this year.

3. Virgil. *First semester*, daily at 12 (Sophomore).

Text-books: Greenough's Virgil, Allen and Greenough's Grammar, Prose Composition.

Lectures on Mythology will be given by the instructor.

4. Horace. *Second semester*, daily at 12 (Sophomore).

Text-books: Wickam's Horace, Kirkland's Horace, Allen and Greenough's Grammar, Prose Composition.

Lectures on Roman Literature will be given by the instructor.

5. Livy or Tacitus. *First semester*, Tuesday, Thursday, Saturday at 10 (Junior).

Text-books: Lord's Livy, Hopkins' Tacitus, Allen and Greenough's Grammar, Tighe's Roman Constitution. This course involves minute study of syntax and some attention to Latin philology.

All of the above courses are required of candidates for the A. B. degree, and all except 5 of candidates for L. B. degree.

ELECTIVE COURSES.

6 Cicero. Two hours a week, *first semester*. Professor JONES.

7. Terence. Three hours a week, *second semester*. Professor JONES.

8. Plautus. Three hours a week, *first semester*. Professor JONES.

9. Syntax. A study of the Cases, Moods and Tenses. Remnants of Early Latin. Two ours a week, *second semester*. Professor JONES.

10. Rapid reading of Latin prose. Two hours a week, *first semester*. Professor BURNAM.

11. Rapid reading of Latin poetry. Three hours a week, *second semester*. Professor BURNAM.

12. Lectures on Roman Constitutional Law. Three hours a week, *first semester*. Professor BURNAM.

13. Lectures on Roman Constitutional Law. Three hours a week, *second semester*. Professor BURNAM.

14. Roman Private Law. Two hours a week, *second semester*. Professor BURNAM.

15. Teachers' Course. This is intended for students who plan to engage in teaching. It is offered both semesters once a week. Hours of all elective courses to be arranged with the instructor.

Courses 6, 7, 8 and 9 are designed for such students as desire to study the historical development of Latin; Courses 10, 11, 12, 13 and 14 are designed for those who desire to study the literature and antiquities.

PREPARATORY COURSE.

[The first year of this course will be discontinued after the session of 1892-93, and the second year after the session of 1893-94.]

This course is intended for those students who are not prepared for the Freshman year (Course 1), and extends over two years.

First Year—Collar & Daniell's Beginner's Latin Book completed.

Second Year—Cæsar (De Bello Gallico), books II, III, IV, V, I.

Text-books: Kelsey's Cæsar, Allen's Prose Composition, Allen and Greenough's Grammar, Ginn's Classical Atlas.

The Roman pronunciation is used, and its adoption is urged upon all teachers preparing students for the University.

A prize is offered for competition in the Sophomore and Junior classes. It will be awarded in 1892-93 to the student who makes the best translation into Latin of Chap. I, McCarthy's History of Our Own Times, through the words "his early promise." At the Commencement of 1892 this prize was awarded to Mr. J. E. Goodrich.

Enrollment of students in the Latin department: in required and elective courses 254.

III. Department of Greek Language and Literature.

Wm. G. Manly, Professor; John Pickard, Associate Professor.

COURSES.

1. Xenophon: *First semester*, Tuesday, Wednesday, Friday, Saturday, at 10. (Xenophon's Anabasis, Goodwin's Greek Grammar, Woodruff's Greek Prose Composition, Smith's History of Greece, Kieperts's or Ginn's Classical Atlas.)

2. Herodotus: *Second semester*, Tuesday, Wednesday, Friday, Saturday, at 10. (Herodotus, Book VII, Seemann's Mythology, Goodwin's Greek Grammar, Woodruff's Greek Prose Composition.)

3. Homer: *First semester*, daily at 9. (Merry's Odyssey XIII–XXIV, Autenrieth's Homeric Dictionary, Seymour's Homeric Language and Verse, Jebb's Introduction to Homer.)

4. Plato: *Second semester*, daily at 9, and one extra hour. (Apology, Crito, Phædo, Goodwin's Greek Moods and Tenses, Jevon's Greek Literature.)

5. Greek Tragedy: *First semester*, Tuesday, Thursday, Saturday, at 12. (Æschylus, Sophocles or Euripides.)

6. Demosthenes: *Second semester*, Tuesday, Thursday, Saturday, at 12.

7. Life of the Ancient Greeks: *Two semesters*. Tuesday, Thursday and Saturday at 11. Professor Manly. Lectures illustrated by maps, charts and stereopticon views. No knowledge of the Greek language is necessary for this course.

8. New Testament: *Two semesters*, two hours a week. Professor Manly. Hours to be arranged with the instructor.

9. Rapid Reading of Greek prose: *One semester*, two hours a week to count as one. Professor Manly. Hours to be arranged with the instructor.

10. Homer: Rapid Reading and study of Homeric Antiquities. *One semester*, two hours a week. Professor Manly. Hours to be arranged with the instructor.

11. Greek Theater: *First semester*, one hour a week. Professor Pickard. Hours to be arranged with the instructor.

Courses 1 and 2 (Freshman), 3 and 4 (Sophomore), 5 and 6 (Junior), are required for the A. B. degree; course 7 is required for the L. B. degree, and does not demand a knowledge of the Greek language.

PREPARATORY COURSE.

[This course will be discontinued after the session of 1893-94.]

This course is intended for students not prepared to enter the Freshman class. *Two semesters*, daily at 9. J. W. White's Beginner's Greek Book, Moss' First Greek Reader, Smith's History of Greece, Kiepert's or Ginn's Classical Atlas.

DEPARTMENT OF CLASSICAL ARCHÆOLOGY.

Associate-Professor PICKARD.

ELECTIVE COURSES.

1. History of Greek Art. *Two semesters*, three hours a week.
2. Greek Epigraphy. *Two semesters*, one hour a week. Text-book.
3. Archæological Seminary. *Two semesters*, two hours a week.
4. History of Greek Vases and Vase Painting. *First semester*, one hour a week.
5. Greek Ideals of the gods. *Second semester*, one hour a week.
6. History of Etruscan and Græco-Roman Art. *Second semester*, two hours a week.

The first semester of course 1 is a prerequisite to this course.

Students should consult the Professor before electing any of these courses.

Courses 1, 3, 4, 5 and 6 do not require a knowledge of the Greek language.

IV. Department of Modern Languages.

J. S. BLACKWELL, Professor. †B. F. HOFFMAN, Assistant Professor.
L. WIENER, Assistant Professor. W. R. GENTRY, Assistant.

Besides the study of grammar and composition, lectures on German and French literature, as outlined in the last catalogue, were given to classes in 1892-93. Classes in German read Boisen's Reader, Heine's Harzreise, Peter Schlemihl, Schiller's Maria Stuart, Gore's German Science Reader, Seidensticker's Scientific Series of Monographs, Buchheim's German Lyrics, Goethe's Egmont, Echtermayer's Auswahl deutscher Gedichte, and Goethe's Faust, first part. Classes in French read Whitney's Brief Reader, Colomba, Le Roman d'un Jeune Homme Pauvre, Balzac's Eugenie Grandet, Dumas's L'Evasion du Duc de Beanfort (from Vingt Ans Apres), Lamartine's Jeanne D'Arc, Victor Hugo's La Chute (from Les Miserables), and DeMusset's Fantasio Classes in Spanish read in Knapp's Readings, and classes in Italian in Foresti's Reader.

REQUIRED COURSES.

1 and 2. Beginning German. Whitney's Brief Grammar and Short Reader, Blackwell's Manual, Andersen's Maehrchen. Four sections. Thrice a week. Professors BLACKWELL, WIENER and GENTRY.

†Absent for the session of 1892-93.

1 and 2. Beginning French. Whitney's Brief Grammar and Brief Reader, Merimee's Colomba. Three sections. Thrice a week. Professors BLACKWELL, WIENER and GENTRY.

3. German Prose Composition, Maria Stuart, lectures. Thrice a week. Professor GENTRY.

3. French Composition and Syntax. Victor Hugo's Bug Jargal, Lamartine's Jeanne D'Arc, lectures. Thrice a week. Professor GENTRY.

4. German Composition continued. Peter Schlemihl, Heine's Harzreise, lectures. Thrice a week. Professor GENTRY.

4. French Composition continued. Georges Sand's La Mare au Diable, Victor Hugo's Ruy Blas, lectures. Thrice a week. Professor GENTRY.

ELECTIVE COURSES.

1 and 2. Beginning Spanish. Manning's Grammar, Knapp's Reading Lessons. Twice a week. Professor BLACKWELL or WIENER.

1 and 2. Beginning Italian. Grandgent's Grammar, Reader. Twice weekly. Professor BLACKWELL or WIENER.

1 and 2. Beginning Russian. Riola's How to Learn Russian, Riola's Reader. Twice a week. Professor BLACKWELL or WIENER.

3 and 4. In Spanish, Selections from Don Quixote and the Cancioneros, Studies in Calderon, Ticknor's Literature. Twice a week. Professor BLACKWELL or WIENER.

3 and 4. In Italian, Tasso's Girusalemme Liberata, four cantos, Machiavelli's Principe, History of the Literature. Twice weekly. Professor BLACKWELL or WIENER.

5. Goethe's Egmont, German Composition, Lectures on the Drama. Thrice a week. Professor WIENER.

5. French Composition, Balzac's Eugenie Grandet, Moliere's Le Bourgeois Gentilhomme, Lectures on the Drama. Twice a week. Professor BLACKWELL.

6, 7 and 8. In German, Dichtung und Wahrheit, Schiller's Ballads, Heine's Poems, Wenckebach's Literaturgeschichte, Goetz von Berlichingen, Faust, first part, Lessing's Laokoon, Nathan der Weise, Composition, Lectures, Conversation. Professors BLACKWELL and WIENER.

6, 7 and 8. In French, Victor Hugo's La Chute (from Les Miserables), Moliere's Tartuffe, Corneille's Cid, Racine's Athalie, Voltaire's Merope, Daudet's Tartarin de Tarascon and L'Evangeliste, Composition, Lectures, Conversation. Professors BLACKWELL, WIENER and GENTRY.

An elective course of two semesters in Conversational and in Scientific French and German is proposed.

Enrollment of students in this Department for the year 1892-93 was 291.

V. Department of Semitic Languages.

J. S. Blackwell, Professor.

There were two classes in Hebrew in 1892-93, and they continued the work through the year.

HEBREW.

1. Bissell's Hebrew Grammar, Genesis.
2. Books of Ruth and Esther, Green's Grammar.
3. Harper's Syntax, The Psalms, Driver's Tenses, Ancient History.
4. Study of Isaiah (Alexander, Cheyne and Delitzsch), Wickes' Accent.

Graduate studies will include post-biblical literature, the Pirke Aboth from the Mishna (Taylor), and the Pentateuchal Question.

(Delitzsch, Dillman, Welhausen, Kuenen, Bissell, Harman, Harper, Green and others.)

ARAMAIC.

1. Brown's Grammar and Reader.
2. The Targums.

Two semesters of Hebrew are necessary for entrance.
No class in 1892-93.

SYRIAC.

1. Nestle's Grammatik and Chrestomathie.
2. Bagster's Peshitto New Testament and Lexicon.

Two semesters in Hebrew necessary for entrance.
No class in 1892 93.

ARABIC.

1. Lansing's Grammar and Chrestomathy.
2. Wright's Reading Lessons, Wortabet's Dictionary, first two surahs of the Koran.

Two semesters of Hebrew necessary for entrance.
No class in 1892-93.
A course of lectures in the Normal School is given every year.

VI. Department of Sanskrit.

J. S. Blackwell, Professor.

1 Perry's Sanskrit Primer, Whitney's Grammar.

2. Story of Nala, Hitopadeca, Dharmacastra.

3. Hymns to Agni and Varuna, and the Funeral Hymns of the Rigveda, Brahmanas.

A class pursued this work through the year; also, a class in Classical Persian was formed, as it was called for.

VII. Department of Comparative Philology.

———, Professor.

VIII. Department of History and Political Economy.

Frederick Charles Hicks, Professor.

First Semester—

1. Ancient and Mediæval History. Text-book. Wednesday and Friday, 2 p. m.

3. History of England. Text-book. Wednesday, Friday, 3 p. m.

5. Theory of Economics. Lectures. Tuesday, Thursday, Saturday, 12 m.

7. Problems in Economics (Social). Lectures and Topics. Tuesday, Thursday, Saturday, 3 p. m. Course 7 must be accompanied or preceded by Course 5.

9. Political Institutions. Text-book. Wednesday, Friday, 12 m. Course 9 must be preceded by Courses 1 and 2.

11. Seminary in History. Topics. Wednesday, 4-6 p. m. Course 11 is intended for advanced students.

Second Semester—

2. Modern History. Text-book. Wednesday, Thursday, Friday, 3 p. m.

4. Political History of the United States. Text-book. Wednesday, Friday, 2 p. m.

6. History of Industrial Development. Lectures. Tuesday, Thursday, Saturday. 12 m.

8. Problems in Economics (Industrial). Lectures and Topics. Tuesday, Thursday, Saturday, 3 p. m. Course 8 must be preceded by Course 5.

10. Political Institutions of the United States. Text-book. Wednesday, Friday, 12 m. Course 8 must be preceded by Course 4.

12. Seminary in Economics. Topics. Wednesday, 4-6 p. m. Course 12 is intended for advanced students.

REQUIRED WORK.

COURSE 1—Ancient and Mediæval History is required of students in the A. B. and L. B. courses during the first semester of the Sophomore year.

COURSE 2—Modern History is required of students in the L. B. course during the second semester of the Sophomore year.

COURSE 3—History of England is required of students in the L. B. and S. B. courses during the first semester of the Sophomore year.

COURSE 5—Theory of Economics is required of students in the L. B. course during the first semester of the Junior year.

COURSE 6—History of Industrial Development is required of students in the L. B. course during the second semester of the Junior year.

IX. Department of Philosophy.

[A Professor is soon to be elected for this Department. During the current year it has been in charge of Professor Blanton, who offered the following courses:]

First Semester—

Psychology. Recitations and Lectures. Text-book: Murray's Hand-book.

Second Semester—

Logic. Recitations and Lectures. Text-book: Jevon

Ethics. Recitations and Lectures. Text-book: Murray.

A course of reading in the history of philosophy will be required.

X. Department of Mathematics and Astronomy.

W. B. SMITH, Professor. W. C. TINDALL, Associate Professor. MILTON UPDEGRAFF, Assistant Professor and Director of Observatory.

(Arabic numerals in parenthesis indicate the enrollment for 1892-93.)

The following courses are offered:

1 and 2. Solid Geometry, Plane and Sperical Trigonometry.—Thrice weekly, both semesters, Freshman.—UPDEGRAFF. (84)

Text: Hayward's Solid Geometry, Smith's Clew to Trigonometry.

3 and 4. Advanced Algebra.—Twice weekly, both semesters, Freshman.—TINDALL. (25)

Text: Smith's Treatise on Algebra, from chapter XIX.

5 and 6. Co-ordinate Geometry.—Thrice weekly, *first semester;* fourtimes weekly, *second semester,* Sophomore.—TINDALL. (23)

Text: Smith's Co-ordinate Geometry.

7 and 8. General Astronomy.—Thrice weekly, both semesters, Junior.—UPDEGRAFF. (6)

Text: Young's General Astronomy.

Of the foregoing courses there are prescribed 1, 2, 5 for the degrees of A. B. and L. B., and all but 7 for the degree of S. B.

ELECTIVES.

9 and 10. Infinitesimal Calculus (double course).—Six times weekly, both semesters, Junior.—SMITH. (10)

Text: Greenhill's Calculus, 2d edition.

11 and 12. Theory of Equations and Quantics.—Thrice weekly, both semesters, Junior.—TINDALL. (3)

Text: Burnside and Panton's Theory, etc.

13 and 14. Solid Co-ordinate Geometry.—Thrice weekly, both semesters, Senior.—TINDALL. (6)

Text: Frost's Solid Geometry.

15 and 16. Differential Equations.—Four times weekly, both semesters, Senior and Graduate.—SMITH. (3)

Text: Forsyth's Treatise on Differential Equations.

17 and 18. Elliptic Functions.—Four times weekly, both semesters, Graduate.—SMITH. (3)

Text: Halphen's *Traite des Fonctions Elliptiques.*

19 and 20. Elliptic Functions—Advanced Course.—Four times weekly, both semesters, Graduate.—SMITH.

Text: Halphen's *Traite,* Vol. II.

21 and 22. Modern Higher Algebra—Theory of Substitutions.—Thrice weekly, both semesters, Graduate.—TINDALL.

Texts: Salmon's and Netto's.

23 and 24. Mathematical Seminary (for orientation in various mathematical disciplines and for incitement to original research).—Twice weekly, both semesters, Graduate.—SMITH. (3). Subjects treated in 1892-93 were Local Probability (Czuber) and Hyperspaces (Killing).

25 and 26. Practical Astronomy.—Thrice weekly, both semesters, Junior.—UPDEGRAFF. (3)

Text: Greene's Spherical and Practical Astronomy.

27 and 28. Practical Astronomy.—Four times weekly, both semesters, Senior and Graduate.—UPDEGRAFF. (2)

29. Least Squares.—Thrice weekly, *second semester,* Junior.—UPDEGRAFF.

30. Determinants.—Twice weekly, *first semester.* Sophomore.—Tindall. (8)

Text: Muir's Theory of Determinants.

Courses 3 and 4 are continued in 11 and 12; Courses 5 and 6, in 13 and 14; Courses 9 and 10, in 15 and 16, which may themselves be extended on demand into the Theories of Linear and of Partial Differential Equations—a series especially recommended to students of Engineering. Courses 13-24 are designed for teachers and special students of Mathematics.

The general condition of admission to any course is knowledge presumably adequate to profitable pursuit of the subject in hand. For admission to the Freshman classes there is required the equivalent of the Preparatory Courses outlined below, and *examination for such admission will be based upon the texts there mentioned*, viz.: Smith's *Elementary Algebra*, Smith's *Treatise on Algebra* (to Chapter XIX), and Smith's *Introductory Modern Geometry*—all published by Macmillan & Co.

PREPARATORY COURSES.

[Courses I*a* and I*b* are discontinued from June 1893, and Courses II*a* and II*b* will be discontinued from June 1894.]

These, hitherto required by the law of the State, extend through two years, as follows:

I*a*. Elementary Algebra (Smith's, 1-249), thrice weekly, both semesters. (146)

I*b*. Introductory Modern Geometry (Smith's, 1-143), twice weekly, both semesters. (161)

II*a*. Algebra (Smith's Elementary completed, Smith's Treatise to Chapter XIX), thrice weekly, both semesters. (36)

II*b*. Geometry (Smith's Introductory Modern completed), twice weekly, both semesters. (89)

Candidates for admission to any of these Courses must pass a satisfactory examination on Arithmetic. The classes are taught by instructors chosen with careful regard to mathematical attainment and to aptitude for teaching.

Total enrollment by classes, 706.

Total enrollment by individuals, 396.

THE LAWS OBSERVATORY.

MILTON UPDEGRAFF, Director.

The Observatory is pleasantly situated on the campus, and is equipped with the following instruments:

(1) A 7½-inch refracting Equatorial Telescope, by Merz und Mahler, of Munich, furnished with a driving clock, position filar micrometer, two spectroscopes, by Fauth & Co., eye-pieces and adapters

(2) A $2\frac{1}{16}$-inch Transit Instrument, by Brunner, of Paris, with a divided circle in declination, read by two verniers to 3 seconds of arc.

(3) An Altitude and Azimuth Instrument, by Blunt, of New York, aperture 2 inches, and also a Sextant by the same maker.

(4) A Sidereal Clock by Fauth & Co., of Washington, a Mean Time Clock by Gregg & Rupp, of New York, and a Sidereal Break-circuit Chronometer, by Wm. Bond & Son, of Boston.

(5) A Chronograph, by Fauth & Co., Theodolite, by Gregg & Rupp, 20-inch Celestial Globe, Barometer and Thermometers, by H. J. Green, of New York, electrical apparatus, and other smaller instruments.

The clocks and instruments are connected with each other by means of insulated copper wire for the transmission of electric signals, and a double line of telegraph wire

connects the Observatory with the Western Union Telegraph office in Columbia for the transmission of time signals. Both clocks and instruments are mounted on piers of solid masonry, isolated from the floors and walls of the building. The dome of the equatorial telescope is 17½ feet in diameter, and is made of wood covered with sheet-iron. It is supported by an octagonal brick tower at the east end of the building, and revolves on wheels that run on a cast-iron track. The telescope is mounted on a wooden stand which rests on a brick pier. A portion of the west end of the building is surmounted by a cone 14 feet in diameter, which revolves on cannon balls and shelters the altitude and azimuth instrument. The transit room has three slits in the walls and roof for observation, and contains the transit instrument, chronograph and sidereal clock. An office 15×18 and a library room 15×12 with basement 15×30 have been recently erected adjoining the west end of the Observatory building.

The course in Practical Astronomy comprises instruction in the theory of instruments, in the solution of the more important problems of Spherical Astronomy, in the use of portable instruments for the determination of Time, Latitude, Longitude and Azimuth, and also in the computation of predictions of eclipses of the sun and moon and transits of the inferior planets. Whenever possible, observations of these phenomena are made by the student, under the supervision of the professor, and thus the accuracy of both computation and observation is tested. When sufficiently advanced, students may undertake a series of micrometric observations with the equatorial telescope, and also the mathematical calculations involved in the reduction of the same. Instruction in the determination of the orbits of comets and planets will be given to students who are fitted to undertake this class of work.

A prize, namely, a medal suitably engraved, is offered yearly for attainments sufficiently high in Astronomical study and research, as evinced by examination and thesis, and is open to all seniors that reach a certain standard of general excellence.

XI. Department of Physics.

Joseph G. Norwood, Professor Emeritus. Millard L. Lipscomb, Professor. William Shrader, Assistant Professor. M. H. Lockwood, Tutor.

The instruction in Physics consists of recitations, lectures, lecture-room experiments and laboratory work, and comprises the following courses:

1. Recitations and lectures three times per week during the first semester of the second preparatory year, attended by all students, in which the whole subject of physics is discussed in an elementary manner and fully illustrated by experiments. This course will be discontinued after session 1893-94.

2. Recitations and lectures four times per week in the second semester of the Sophomore year. Subjects: Mechanics, Sound and Heat. Requisite for admission, grades in all mathematics up to the first semester of the Sophomore year. Required in the Scientific and Engineering Courses, elective in the A. B. and L. B. Courses.

3. Recitations and lectures twice per week. Subject: Electricity and Magnetism. Requisite for admission, same as in Course 2. Required in Scientific and Engineering Courses, elective in A. B. and L. B. Courses.

4. Laboratory. Two hours a week through the first semester of the Junior year. Requisite for admission, a grade in Course 3. Required in the Scientific and Engineering Courses, elective in the A. B. and L. B. Courses.

5 Recitations and lectures. Subject: Optics. Requisite for admission, same as Course 2. Required in Scientific and Engineering Courses, elective in A. B. and L. B. Courses.

6. Laboratory. Four times a week through the second semester of the Junior year. For courses in Physics in the Engineering Courses, see Engineering.

7. The practical application of Electricity in Medicine and Surgery.

ELECTIVES.

To students in the A. B. and L. B. courses is offered the Physics laid down in the Sophomore and Junior years of the Scientific course.

To all Academic students the following conrses are offered:

JUNIOR.

8. Laboratory. Two hours a week, *first semester*.

9. Special instruction in the construction and manipulation of apparatus for lecture table experiments. This course is especially intended for teachers. Three hours a week, *first semester*.

10. Electricity and Magnetism. Four hours a week, *second semester*.

SENIOR.

11. Mechanics. Four hours a week, *first semester*.

12. Laboratory. One hour a week, *first semester*.

13. Mechanical Theory of Heat (Clausius) or Thermodynamics. Five hours a week, *second semester*.

14. Special Laboratory work.

LABORATORY.

In addition to the instruction received in common with the other classes, the students in the scientific and engineering courses are required to take two hours per week during the first semester of the Junior year, and four hours per week during the second semester of the Junior year, in the Physical Laboratory.

The work consists of precise weighings, determinations of densities, verification of the laws of elasticity and capillarity, determinations of the intensity of gravity, barometric readings and reductions, magnetic declination and inclination, horizontal intensity of the earth's magnetism, variation of magnetic intensity, magnetic moment, temperature co-efficient of magnets, measurement of resistance of conductors and batteries, electro-motive forces, potentials, capacities, strength of currents, calibration of rheostats, verification of the laws of sound and radiant heat, determinations of specific and latent heats, expansions and vapor densities, radii of curvature of lenses and mirrors, focal lengths, wave lengths, indices of refraction, angles of crystals and verifications of the laws of diffraction and interference.

The students study spectrum analysis, learn the use of the microscope, and in polarized light determine the rotation of the plane of polarization, percentage of sugar in solutions by means of saccharimeter, experiment with double refracting bodies, distinguish between positive and negative crystals, determine angle of optical axes of crystals, etc.

Advanced laboratory work and reading courses in Physics will be given to suit the individual needs of special students.

GRADUATE WORK.

The following courses are opened (1) to graduate students, (2) to undergraduates under certain conditions:

15 Thermodynamics. Two hours.

16. Theory of Electricity and Magnetism (Mascart-Joubert). Three hours.

17. Readings and Discussions. One hour.

18. Absolute measurements in Electricity and Magnetism. Laboratory practice in the determination of current, electromotive, resistance, electric capacity, and the magnetic elements in absolute measure.

19. Thermometry and Calorimetry. Laboratory practice, including the study of the thermometer as an instrument of precision, method of measuring temperature, thermal capacities and influence of temperature upon physical constants. Three hours.

20. Advanced laboratory work in general Physics. This course is intended to meet the wants of those intending to teach experimental physics. Time will be arranged to suit the student.

Other courses will be given to meet the individual needs of students.

PHYSICAL APPARATUS.

The instrumental equipment of the Department of Physics was almost entirely destroyed by the fire of January 9, 1892, but has been replaced by apparatus especially selected for accurate measurements. The instruments are of the most approved forms, principally bought of the following renowned makers: Queen, Ritchie, Becker and Green of this country; Browning, Patterson and Cooper, and Elliott Bros., London; Hartmann and Braun, and Edelmann, Germany; Duboscq, Demeritens, and Breguet, and Koenig, Paris; Societe Genevoise, Geneva.

Text-books: Maxwell's Theory of Heat, Deschanel's Heat, Pt. II, Sheldon's Olmsted's Physics, Anthony & Brackett's Physics, Atkinson's Dynamic Electricity, Liebig and Rohe's Practical Application of Electricity in Medicine and Surgery, Mascart and Joubert's Elect. and Magnetism, Schellen's Spectral Analysis, Stewart & Gee's Practical Physics, Glazebrook & Shaw's Practical Physics, Kohlrausch's Physical Measurements, and Gray's Absolute Measurements.

For Laboratory fees see "Fees and Expenses."

Enrollment of students, 1892-93, 210.

XII. Department of Chemistry.

PAUL SCHWEITZER, Professor.
FREDERICK HOMBURG, Assistant Professor.
*SILAS DINSMOOR, Assistant.
C. L. HARE, Assistant.

I. ARRANGEMENT OF CLASSES BY SEMESTERS.

First Semester—

11-12 (4 hours). Phenomenal Chemistry.

8 hours Laboratory work, divided according to plan into
3 hours Young Chemist,
5 hours Qualitative Analysis.

ELECTIVES.

3 hours Applied Chemistry.
3 hours Organic Chemistry.
3 hours Qualitative Analysis.
3 hours Quantitative Analysis.

Second Semester—

11-12 (4 hours). Phenomenal Chemistry.

8 hours Laboratory work, divided according to plan into
3 hours Young Chemist.
5 hours Qualitative Analysis.

10-11 (3 hours). Rational Chemistry.

ELECTIVES.

3 hours Agricultural Chemistry.
3 hours Physiological Chemistry and Toxicology.
3 hours Qualitative Analysis.
3 hours Quantitative Analysis.

II. SYNOPSIS OF WORK.

1. *Phenomenal Chemistry*, 4 hours, an elementary course of instruction, consisting in experimental demonstrations of the facts of the science, and embracing both the metalloids and the more common of the metals: calculations of quantities by weight and volume, of changes in the volume of gases by changes of temperature and pressure, writing of reactions and establishing of formulas upon proper physical facts, accompany the work. (Ira Remsen: An Introduction to the Study of Chemistry.)

2. *Chemical Laboratory*, 8 hours, divided as indicated above between work in which the use of apparatus and the art of making experiments are taught—the experiments being simple and illustrative of the properties of the more common of the elements and their compounds (Appleton: The Young Chemist)—and practice in qualitative analysis, separating and detecting all of the more common bases and acids in simple compounds and in complex mixtures. (Curtman: Lessons in Qualitative and Volumetric Chemical Analysis.)

3. *Rational Chemistry*, 3 hours: the principles of Chemical Philosophy, with a review of inorganic chemistry. (Cooke: Principles of Chemical Philosophy, Part I.)

*On leave of absence.

ELECTIVES.

4. *Applied Chemistry*, 3 hours; *Air*, respiration, vitiated air and ventilation; infection, contagion, germ theory of disease. *Water*, potable water, hard and soft; impurities in it, such as lead and sewage matter, and their effects upon health and life; mineral and other waters. *Food*, composition and general properties; *bread, meat, milk, sugar;* preservation of food, and food adulterations. *Illuminants, Disinfectants, Antiseptics.*

5. *Organic Chemistry*, 3 hours; a general view of subject; detailed treatment of monatomic alcohols, acids and derivatives; aromatic compounds; compound ammonias, alkaloids. (Ira Remsen: An Introduction to the Study of the Compounds of Carbon.)

6. *Agricultural Chemistry*, 3 hours; general introduction; functions of the plant, including production, conversion, transportation, deposition of organic matter; physiological structure of the cell; respiration; the green cell an apparatus for doing work dependent upon light and heat; nitrogenous constituents of the plant and their relation to free and combined nitrogen: mineral constituents; membranous diffusion; assimilation; conditions of vegetation.

Soil, its formation, composition, alteration by mechanical, chemical, biological agencies; its relation to light, heat and moisture.

Manures, natural and artificial; their composition, application, value.

7. *Physiological Chemistry and Toxicology*, 3 hours; general introduction; constituents of the body; inorganic, histogenic and products of retrogressive metamorphosis; blood and related fluids; milk and other secretions; urine, healthy and pathological.

Poisons, their classification, description, recognition; action of poisons; their detection and isolation in judical investigations.

8. *Laboratory work*, 3 hours, qualitative analysis; twice 3 hours, quantitative analysis, as may be determined upon. For Laboratory fees see "Fees and Expenses."

Number of students in this Department, 297.

XIII. Department of Geology and Mineralogy.

G. C. Broadhead, Professor; W. W. Clendenin, Assistant Professor; M. H. Lockwood, Tutor.

MINERALOGY AND LITHOLOGY.

Students in Science and Engineering courses are required to take the course in Mineralogy and Lithology. The time occupied may be found in the schedule. One afternoon each week is devoted to Laboratory work.

Students in Arts and Letters may elect the course in Mineralogy.

In Physical Mineralogy, students will also receive instruction in Crystallography, including the measuring of angles of crystals, their physical characters, such as H., Sp. Grav., polarized light, etc.

In the study of minerals the most important will be considered, including the rock-making species *(a)*, chief ores *(b)*, the gems *(c)*, and those of economic value *(d)*.

The course of Lithology embraces the study of the composition, structure and origin of the most important rocks.

To students who elect special work in Mineralogy and Lithology will be furnished facilities for work in Mathematical Crystallography and optical investigations of minerals and rocks: also a systematic and comprehensive course in Mineralogy.

Fees to cover use of apparatus and material will be charged.

For admission into class in Mineralogy students must have taken a course in Chemistry.

PHYSICAL AND ECONOMIC GEOLOGY AND MINERALOGY.

Instruction in this course will be given to the Agricultural and Engineering students. The instruction will be chiefly by lectures upon Economic Geology and Mineralogy, Lithology, Physical Geography and Geogical Surveying, embracing the study of building materials, decomposition of rocks and production of soil, useful minerals, their occurrence in veins and beds; coal deposits, useful mineral substances, and surface Geology and its application to Engineering and Agriculture.

Text-book: Williams' Applied Geology.

The rich mineral resources of Missouri will be freely discussed, and its Geology often referred to.

Advanced students in Geology will devote a large portion of their time to the study of Palæontology and the determination of fossils, with occasional practice in Field Geology. The course in Palæontology will be mainly by lectures and the study of fossils.

To students who elect a special course, opportunity for field-work will be given during both semesters.

Students in Geology are expected to have previously studied Puysical Geography, Zoology and Chemistry. The course in Physical Geography is quite thorough.

Text-book: Appleton's Physical Geography.

Text-book for Geology: Le Conte's Elements.

Text-book for Mineralogy: Dana. Books of reference, Dana's Geology.

The Geology of Missouri will be often discussed and its structure fully explained.

ELECTIVE COURSES.

Full opportunity will be given students to continue the course in Mineralogy for an additional semester, or longer, if so desired. This will include—

A. 1. Physical Mineralogy, Crystallography and Physical Properties of Minerals.
2. Laboratory work relating to the above, with Microscopic work.

B. Descriptive and Determinative Mineralogy, with Laboratory work.

C. Lithology, with such Laboratory work as we are prepared for.

D. Discussion of Ores, Mines and Mining.

E. Metallurgy and Assaying.

To students who have already taken a semester's work in Mineralogy, the Elective course will consist of additional studies of minerals and their complete determination As far as practicable, they can add microscopical as well as macroscopical studies of both minerals and rocks.

The following is a general statement of the character of the regular course, as well as the

ELECTIVE COURSE IN GEOLOGY.

Students in Arts and Letters may elect the course in Geology. Full opportunity will be given students to continue the course in Geology and Palæontology for an additional session, and to take also additional field-work.

First Semester:

Physiographic and Lithologic Geology (one week).

Dynamical and Structural Geology.

Occasional Geologic excursions.

Applied (Economic) Geology.

Missouri Ores.

Study of Fossils.

Thesis and monthly discussions and criticisms in seminary.

Second Semester:

Historic Geology and Palæontology, with Laboratory and field-work.

The course in Geology includes the form and features of the earth, its physical changes due to atmospheric agents and to temperature, trend of mountain ranges, erosion and transportation of sediments.

Lithological Geology—Definition of minerals and rocks, classification of rocks.

Dynamical Geology—Glaciers, drift, chemical agents, formation of caves, deposits in springs, salt lakes, alkaline lakes, organic agencies, formations of peat, coal, iron ore, coral reefs; volcanoes, earthquakes, elevation and depression of earth's surface, mountain-making.

Structural Geology—General form of the earth, its crust, continental form, stratified rocks, how formed, how changed; folds, faults, dip, cleavage, etc ; structures common to all rocks, mineral veins, metamorphism, igneous rocks.

Economic Geology—Substances used in the arts, building stones, limes, clays, fuels, minerals, ores.

Classification of soils—how formed and reclaimed; fertilizers; water supply; Missouri ores described, their occurrence, distribution; related minerals and value.

Thesis and monthly discussions.

HISTORIC GEOLOGY AND PALÆONTOLOGY.

Reference, Nicholson's Palæontology, Meller's Palæontology, and State and U. S. Surveys.

Classification of strata and their distribution, as related to Missouri; use of fossils and how formed; description of chief palæozoic forms of life, their advent, culmination, decline or extinction; carboniferous flora and formation of coal, and area of coal fields; animal life of each age; age of various mountain systems, how and when formed; Appalachian, Alpine, Ozark uplift

Geological excursions when practicable, Geologic drawing, Thesis.

Students who have already taken the S B. course in Geology may supplement their work by additional studies in Historic Geology and Palæontology, including a determination of characteristic fossils; the formation and relative age of the various mountain systems; the whole supplemented by Lectures on Economic and Areal Geology.

Total number of students in the Department for 1892-93, 96. For Laboratory fees see "Fees and Expenses."

XIV. Department of Biology.

Geo. D. Purinton, Professor; W. R Dodson, Assistant.

BOTANY.

The course includes a study of the fundamental principles of Vegetable Morphology, Plant Nutrition and Physiology, and Plant Analysis.

The object of the course is to fit the student for the higher work in Botany, and to meet the requirements of the Normal and Agricultural Courses in Biology as at present constituted in the University.

Text-books: Gray's School and Field Book of Botany, Purinton's Plant Analysis.

All students in the Scientific Course are required to take an advanced course in Botany during the spring term of the Freshman year. This course is also open to classical and literary students who may elect Science Elective courses in Botany are also offered as shown in the appended table of elective studies.

ZOOLOGY.

Preparatory students, whether at the University or in the approved schools, are required to take one term in Elementary Zoology, accompanied by simple dissections in the Laboratory. This course will be discontinued in A. B. course after session 1892-93, in L. B. and S. B courses after session 1893-94.

The Advanced Course for Scientific students begins with the commencement of the Freshman year and continues for one term, and is open alike to Classical and Literary students.

The course consists of lectures on Comparative Anatomy and Physiology, Histology, Embryology, the Mental Traits and Habits of the Lower Animals, and the Natural History of Man.

The course is accompanied by Laboratory practice with the microscope, and illustrated by views with the stereopticon.

THE BIOLOGICAL LABORATORY.

The Biological Laboratory is supplied with Bausch and Lomb, Crouch and Nachet microscopes, hand microtomes, a large and superior Thoma microtome, turn-tables, and various accessories for the critical histological study of vegetable and animal tissues

Science students are required to spend three afternoons of each week during the fall term of the Sophomore year in the Biological Laboratory, and the same course is open to students in the Classical and Literary Courses. The course includes a study of the minute anatomy of common phænerogams, and such ordinary cryptogams as are obtainable, and the microscopic fungi (rusts, smuts, moulds, and plant diseases in general).

For Medical students there is a course in Botany, embracing lectures in Plant Physiology and Nutrition, for three days in each week, extending through the fall term.

A course in Economic Botany for Engineering students is given upon two days in the week in the spring term.

A short two months' teachers' course in Botany and Zoology is given during the months of April and May.

Electives in Biology.

The following elective courses are offered to all students of the University:

ZOOLOGY.

First Semester:

(a) Embryology, 2 times per week.

(b) Mammalian Anatomy, including dissections in the laboratory, 5 times per weeek.

(c) Practical Osteology, 5 times per week.

(d) Ornithology, with Taxidermy, 5 times per week.

(e) Economic Entomology, 3 times per week.

Second Semester:

(a) Anatomical Technology of Vertebrates, 5 times per week.

(b) Animal Histology, 3 times per week.

BOTANY.

First Semester:

(a) Economic Botany (lectures), 3 times per week.

(b) Vegetable Histology (laboratory), 3 times per week.

(c) Bacteriology (lectures and laboratory), 2 times per week.

Second Semester:

(a) Physiological Botany, 2 times per week.

(b) Cryptogamic Botany, 3 times per week.

(c) Lectures on Fungi, 2 times per week.

(d) Microscopical Study of Fungi, 3 times per week.

GENERAL BIOLOGY.

First semester—Elementary General Biology. Two times per week.

Second semester—Elementary General Biology, continued. Two times per week.

Number of students in Biology during the year, 180.

THE MUSEUM.

Professor PURINTON, Curator.

A new and elegant building for the occupancy of the Biological and Geological departments and the Museum is in process of construction, and will be ready for use at the opening of the next school year, in September, 1893.

The Museum will be 43×100 feet, will be fire-proof, and will contain two stories, with ample space for the accommodation of extensive and varied collections.

The building will contain, besides the Museum, large and commodious lecture-rooms and laboratories, and will be well equipped with microscopes and all modern appliances for the critical study of Biology in its varied phases. By a recent act of the Legislature of the State, the entire Missouri collection at the World's Fair will be sent to the University (at Columbia and Rolla) in 1895, and remain there as a part of the permanent equipment of the Museum. The money value of this collection will be many thousands of dollars, and, added to the large number of valuable specimens saved from the Uni-

versity fire, will constitute an admirable cabinet, illustrative of the Natural History and other resources of the State.

The scientific value of these collections to the University will be very great.

For a statement of the Laboratory fees in the Biological department, see "Fees and Expenses."

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

All the schools of this College, including Agriculture, Horticulture, Mechanic Arts, Drawing and Veterinary Science, are open to such students of the other departments of the University as have the time and inclination to enter them.

For full details of courses of study and facilities for instruction, see pages 42, and following.

Scheme of Academic Studies.

On the opposite page will be seen the scheme of Academic studies, arranged in three groups or courses:

The Classical, leading to the degree of A. B.; the Literary, to the degree of L. B.; the Scientific, to the degree of S. B.

A slight examination will show that in the Classical course Latin and Greek predominate; in the Literary course, English and Modern Languages; in the Scientific course, Mathematics and the Sciences.

On reaching the Junior year, the candidate for a degree will choose such special lines of work as he finds suited to his taste and need. In the choice of electives, however, certain rules are laid down for his guidance.

REGULATIONS CONCERNING ELECTIVES.

1. In the Junior and Senior years, students in the Classical or A. B. course must elect twelve hours—that is, three hours each semester—from the electives offered in Latin, or Greek, or Roman or Greek History, or Comparative Philology; those in the Literary or L. B. course must elect twelve hours—that is, three hours each semester—from the electives offered in English (Language or Literature), or French, or German, or History (Mediæval or Modern), or Political Science; those in the Scientific or S. B course must elect twelve hours—that is, three hours each semester—from the electives offered in Mathematics or in Science. The student may give the entire twelve hours to one department, or divide the time as he may deem proper among the eligible departments.

2. The student may apply the remaining hours of elective work to any Academic elective course (for which he is prepared) offered in the University, or to any regular academic study which is not required in the course that he is pursuing, or to a course in Pedagogy of not more than three hours a week, or to a course in Veterinary Science of not more than three hours a week, or to a course in Agriculture or Horticulture of three hours a week, in either Junior or Senior year.

By Academic course is meant one not given in any of the professional schools of the University.

3. When the student has elected a subject that he has not studied before, he must pursue it for at least two semesters unless the subject is completed in less time.

4. Seniors and Juniors who have Sophomore or Freshman work (or both) to make up, must give such work precedence over elective work in making out their cards.

5. No student shall change an elective after two (2) weeks from the date of his enrollment in the class

Any student not a candidate for a degree may take any subject taught in the University, in any class for which, in the judgment of the head of the department, he is sufficiently equipt.

CONDITIONS OF ADMISSION.

For admission to the Freshman class in the A. B. course are required: Two years of Latin (including Cæsar); one year of Greek: two years of Algebra and Plane Geometry. In English, elementry Rhetoric and Composition, and advanced Grammar. For other subjects, see the table of Preparatory courses, p. 32.

For admission to the Freshman class of the L. B. course, the conditions are the same as for the A. B. course, except that no Greek is required, but elementary Physics, U. S. History and American Literature instead.

For admission to the Freshman class of the S. B. course, the conditions are the same as for the L. B. course, except that German or French may be substituted for Latin.

SCHEME OF STUDIES.

A. B.

Freshman, First Semester.

9-10. Latin . . . . . ‡5
10-11. Greek, T W F S . . 4
12-1. Comp. and Rhetoric, W. F. 2
2-3. Geom. and Trig, T. Th. S 3
*Science, T. W. F S. 4

Freshman, Second Semester.

9-10. Latin 5
10-11. Greek, T. W. F. S. . 4
12-1. Comp and Rhetoric, W. F. 2
2-3. Geom. and Trig, T. Th. S 3
*Science, T. W. F. S. 4

Sophomore, First Semester

9-10. Greek 5
10-11. Anal. Geom., T. Th. S 3
11-12 English, T. Th. S. . . 3
12-1. Latin 5
2-3. Anc. and Med. Hist. W. F. 2

Sophomore, Second Semester.

9-10. Greek 6
11-12. English, T. Th. S. . . 3
12-1. Latin 5
Math or Science . . . 4

Junior, First Semester.

9-10 French, T. Th. S. . . 3
10-11. Latin, T. Th. S. 3
12-1. Greek, T Th S . . . 3
2-3. Ment and Mor. Phil 2
3 4. German, T Th S . . 3
Elective 4

Junior, Second Semester.

9-10. French, T Th S . . 3
12-1. Greek, W Th F. . . . 3
3-4 German, T. Th. S. . . 3
Philosophy, W. F . . 2
Elective. 7

Senior, First Semester.

9-10 Fr. or Ger., T Th. S. 3
10-11. Ment. and Mor. Phil 3
Elective 11

Senior, Second Semester.

9-10. Fr. or Ger. T Th S 3
10-11. Ment and Mor. Phil 3
Elective 11

L. B.

Freshman, First Semester.

9-10. Latin . . . . . ‡5
12-1. Comp. and Rhetoric, W Th F 3
2 3. Geom. and Trig., T. Th. S. 3
3-4. Ger or Fr , T Th S. 3
*Science, T. W F.S. 4

Freshman, Second Semester.

9-10. Latin 5
12-1. Comp and Rhetoric, W. Th. F 3
2-3 Geom. and Trig , T. Th S 3
3-4 Ger or Fr , T Th S. 3
*Science, T. W. F. S. 4

Sophomore, First Semester

9-10. Ger. or Fr , T. Th. S. 3
10-11. Anal. Geom., T. Th. S. 3
11-12 English, T. Th. S. . 3
12-1. Latin 5
2-3. Anc. and Med. Hist. W F 2
3-4. English Hist , W. F. 2

Sophomore, Second Semester.

9-10. Ger or Fr., T Th. S. 3
11-12. English, T. Th S... 3
12-1. Latin 5
2-3. Mod Hist., W Th. F. 3
Math or Science . . 4

Junior, First Semester.

9-10. Fr or Ger., T Th S. 3
10-11. English, W Th. F. 3
11-12. Gr. Ant , T Th S . . 3
12 1 Pol Sci., T. Th S . 3
2-3. Ment and Mor. Phil. 2
Elective 4

Junior, Second Semester.

9-10. or 12-1. Fr. or Ger., T. Th. S 3
10-11. English, T. Th. S. . 3
11-12. Gr. Ant., T. Th. S. 3
2-3. Ment and Mor Phil. 2
3-4. Pol. Sci , T. Th. S.. 3
Elective 4

Senior, First Semester.

9-10. Fr. or Ger., T. Th S 3
10-11. Ment and Mor Phil. 3
Elective 11

Senior, Second Semester.

9-10. Fr. or Ger , T. Th. S. 3
10-11. Ment and Mor Phil. 3
Elective 11

S. B.

Freshman, First Semester.

9-10 or 12 1. Ger. or Fr , T. Th. S . . . . ‡3
10-11. Biology, T W F S . 4
11-12 Chem., T. W F S. 4
12-1. Comp. and Rhetoric, W. F. . . . 2
2-3 Geom. and Trig . . . 5

Freshman, Second Semester.

9-10. or 12-1 Ger or Fr., T. Th S. 3
10-11. Biology, T. W. F. S 4
11-12. Chem , T. W F. S. 4
12-1. Comp. and Rhetoric, W. F. 2
2-3. Geom and Trig . . . 5

Sophomore, First Semester.

9 10 Ger or Fr., T Th S. 3
10-11. Anal Geom. T. Th. S. 3
11-12. English, T. Th S . 3
12-1. Miner'gy, T. W F S. 4
2-3. Biology, W. Th F. 3
2-3. Eng Hist., W. F .. 2

Sophomore, Second Semester

9-10. Ger. or Fr., T. Th. S. 3
10-11. Physics, W. Th F. S. 4
11-12. English, T. Th S . 3
12 1. Geology, T. W Th F 4
12-1. Anal. Geom 4

Junior, First Semester.

9 10. or 12-1. Fr. or Ger. T Th. S 3
10-11. English, W Th. F. 3
10-11 12. Geology, T. Th. S .. 3
12-1. Physics, T Th S .. 3
2-3. Ment. and Mor. Phil. 2
Elective 4

Junior, Second Semester.

9-10. or 12-1. Fr. or Ger. T. Th S 3
10-11. Chem., T. Th S 3
11-12. Astro'my, W. Th F. 3
12-1. Physics, T. Th. S... 3
2-3 Ment. and Mor Phil. 2
Elective 4

Senior, First Semester.

9-10. Fr. or Ger , T Th S. 3
10-11. Ment. and Mor. Phil. 3
Elective 11

Senior, Second Semester.

9-10. Fr. or Ger., T. Th. S. 3
10-11. Ment. and Mor. Phil. 3
Elective 11

* Students may elect four hours of any scientific study or studies.

† If German be taken during the Freshman and Sophomore years, then French *must* be taken during the Junior and Senior years, and *vice versa*.

Military Science and Tactics may be taken in addition to the 18 hours of other subjects.

‡ The figure after each study indicates the number of recitations or lectures each week.

PREPARATORY COURSES.

FIRST YEAR.

	A. B	L. B.	S. B.
First Semester	10-11 Mathematics.....*5 9-10. Latin. . ..... 5 12-1 Physiology and Hygiene.... .. 4 2-3. Zoology .. .. 3 4-5. †Military Science or Book-keeping 3	10-11. Mathematics . .... *5 9-10. Latin ..... 5 12-1. Physiology and Hygiene .. ... 4 11-12 U. S. History ..... 3 4-5. †Military Science or Book-keeping 3	10-11. Mathematics ..... *5 9-10. ‡Latin, German or French .... 5 12-1. Physiology and Hygiene..... 4 11-12. U. S. History . . 3 4-5 †Military Science or Book-keeping 3
Second Sem	9-10. Mathematics. ... 5 12-1. Latin... ..... 5 11-12. English. .... 5 10-11. Botany . ..... 3 4-5 †Military Science or Book-keeping 3	9-10. Mathematics ..... 5 12-1. Latin . ..... 5 11-12. English. .... 5 10-11. Botany ..... 3 4-5. †Military Science or Book-keeping 3	9-10. Mathematics ..... 5 12-1. Latin, German or French ..... 5 11-12. English .... 5 10-11. Botany ..... 3 4-5 †Military Science or Book-keeping 3

SECOND YEAR.

First Sem.	12-1. Mathematics. ... 5 10-11 Latin .... 5 3-4 English ..... 5 9-10. Greek 5	12-1. Mathematics ..... 5 10-11. Latin . ..... 5 9-10. English ..... 5 11-12. Physics .... 3 2-3. Zoology..... 3	12-1. Mathematics ..... 5 10-11. Latin, German or French..... 5 9-10. English ..... 5 11-12. Physics ..... 3 2-3 Zoology..... 3
Second Sem.	12-1. Mathematics..... 5 10-11. Latin. .... 5 11-12. Phys Geography 5 9-10. Greek 5	12-1. Mathematics . ..... 5 10-11 Latin . ..... 5 11-12. Phys. Geography .. 5 3-4 Amer Literature .. 2 3-4 Civil Government.. 3	12-1. Mathematics ..... 5 10-11. Latin, German or French..... .... 5 11-12. Phys. Geography .. 5 3-4. Amer. Literature .. 2 3-4. Civil Government.. 3

*The figure opposite each subject indicates number of hours per week. †Optional.

‡Those who elect two years of German or French in the Preparatory Science course, in place of Latin, will be excused from German or French in the University course, but must elect an equivalent, approved by the Faculty.

EXPLANATION.

I. MATHEMATICS above means Algebra and Plane Geometry. The texts are Smith's Elementary Algebra (complete) and Smith's Treatise on Algebra (as far as Chapter XIX); and in Geometry Smith's Introductory Modern Geometry (complete except latter half of Exercise V). Throughout the two years the classes in Algebra meet thrice and in Geometry twice per week. About 120 pages of Algebra and 75 pages of Geometry are studied each semester.

II. LATIN First year, first semester: Collar and Daniell's Beginner's Latin Book, to page 103.

Second semester: The same completed.

Second year, first semester: Cæsar De Bello Gallico, Books II and III. Allen's Introduction to Latin Composition, to Lesson 16. Allen and Greenough's Grammar—careful review of Declensions and Conjugations.

Second semester: Cæsar De Bello Gallico, Books IV, V, I. Allen's Introduction, etc., to Lesson 32. Allen and Greenough's Grammar, coarse print of Syntax.

III. English. First year, first semester: Students are admitted who pass a satisfactory examination in English grammar.

Second semester: Composition and Rhetoric. Text-book: Williams' Rhetoric. English Classics.

Second year, first semester: English Language. Text-books: Meiklejohn, and Rolfe's Shakspere's Tempest.

Second semester: American Literature. Text-book: Hawthorne and Lemmon's American Literature. American Literature Series.

IV. Greek. Second year: White's Beginner's Greek Book, complete. First Greek Reader (Moss).

V. German. First year, first semester: Whitney's Brief Grammar. Whitney's Short German Reader.

Second semester: Whitney's Revised Grammar. Reader completed.

Second year, first semester: Buchheim's Prose Composition, Schiller's Maria Stuart.

Second semester: Buchheim continued, Eichendorff's Aus dem Leben eines Taugenichts.

VI. French. First year, first semester: Whitney's Brief French Grammar and Brief Reader.

Second semester: The same completed. Merimee's Colomba.

Second year, first semester: Whitney's Larger Grammar, Saddler's Translating English into French, Le Roman d'un Jeune Homme Pauvre.

Second semester: Grammar and Saddler continued, Victor Hugo's Bug Jargal.

VII. Book-keeping. Principles of Single and Double Entry, with practice in the same by the student. Business Forms, etc. Text-book: Goodyear & Palmer's. Optional.

VIII. Military Science. Theoretic instruction in Infantry Drill Regulations, Artillery Tactics, Guard Manual, Art of War, Field Engineering, with practical exercise in Infantry and Artillery Drill, Guard duty, Encampment, Target Practice and Field Entrenchments. Optional.

IX. Botany. Gray's School and Field Book of Botany completed; Purinton's Plant Analysis.

Zoology. Packard's Briefer Course in Zoology and Colton's Practical Zoology, with dissections, completed.

X. Physical Geography. Appleton's complete, with outlines of Meteorology and Geology.

XI. Physics. The text-book is Gillet and Rolfe's, with special attention to Mechanics, Heat, Electricity and Magnetism.

XII. History and Government. Johnston's The United States and Dole's The American Citizen. The former will perhaps soon be supplaced by some work on General History.

XIII. Physiology and Hygiene. Martin's Human Body—the subject treated topically, and the text largely supplemented by lectures.

The foregoing are recommended to High Schools as minimum courses. Many will be able to extend and strengthen these courses considerably, and all are encouraged to do so.

While there is no desire to prescribe text-books, those mentioned above are strongly recommended. If others are substituted, they should be of equivalent grade.

APPROVAL OF HIGH SCHOOLS AND ACADEMIES.

The full course of study pursued at the University as preparatory to the Freshman class is outlined above. This schedule of sub-Freshman work has been arranged in the belief that the majority of High schools and Academies in the State are prepared to adopt it. If any such school conform its own curriculum to any of these courses, such school shall, upon application to the President of the University, and on approval by the Faculty, he enrolled as "approved" in the University catalogue, and its certificate shall admit the bearer, without examination, to the Freshman class of such course or courses.

An approved school may, at its option, teach the five sciences in the above course, or it may devote the entire time to any two of them. In case any school does the latter, the sum total of science work required is reduced to two years, one-half of which must he given to each of the sciences chosen.

DISCONTINUANCE OF PREPARATORY COURSES.

The 37th General Assembly has so amended the law of the State as to relieve the University from what had seemed to be an obligation to maintain a preparatory department. The standard of admission under the amended law is left to the judgment of the Curators. The lower preparatory year will be discontinued after June, 1893; the upper (sub-Freshman) preparatory year will be discontinued after June, 1894.

LIST OF APPROVED SCHOOLS.

The following schools have been approved and their certificate will admit the bearer to the Freshman class without examination:

Name of School.	Location.	Name of School.	Location.
*Bethany High School 3....	Bethany.....	‡Memphis High School 3...	Memphis.....
‡California High School 4..	California.....	‡Miami High School 3.....	Miami.....
†Cameron High School 4....	Cameron	‡Mexico High School 3.....	Mexico.....
‡Carthage High School 4...	Carthage.....	‡Milan High School 3.....	Milan .....
‡Carrollton High School 3..	Carrollton	†Missouri Military Acad. 4.	Mexico.....
‡Chillicothe High School 4.	Chillicothe....	‡Mound City High School 4.	Mound City...
†Clinton Academy 4.....	Clinton.....	‡Mountain Grove Acad. 4..	Mount. Grove
‡Clinton High School 3.....	Clinton	‡Neosho High School 3....	Neosho.....
†Cooper Institute 3.....	Boonville	‡Nevada High School 3.....	Nevada.....
‡Craig High School 4.....	Craig.....	‡Odessa High School 3.....	Odessa.....
‡Ft. Smith High School 4 ..	Ft. Smith, Ark	‡Otterville College.....	Otterville.....
‡Hamilton High School 3...	Hamilton	‡Paris High School 4.....	Paris.....
†Hannibal High School 4...	Hannibal	†Perry Institute 4.....	Perry.....
‡Harrisonville High School.	Harrisonville .	‡Plattsburg High School 3.	Plattsburg ....
‡Higginsville High School 3	Higginsville ..	‡Richmond High School 3..	Richmond.....
†Hooper Institute 3.....	Clarksburg ...	‡Salem High School 4.....	Salem.....
‡Independence High Sch. 3.	Independence.	†Salisbury Academy 4.....	Salisbury .....
‡Jefferson City High Sch. 4.	Jefferson City.	‡Savannah High School 4...	Savannah.....
‡Joplin High School 4.....	Joplin.....	‡Sedalia High School 4.....	Sedalia.....
†Kansas City High School 4	Kansas City ..	‡Shelbina High School 4....	Shelbina .....
†Kemper Family School 4..	Boonville	‡Slater High School 3.....	Slater.....
‡Lamar High School 3.....	Lamar	†St. Joseph High School 4..	St. Joseph ....
‡Lancaster High School 3..	Lancaster.....	†St. James Mil. Acad. 4...	Macon.....
‡Louisiana High School 3..	Louisiana	†St. Louis High School 4...	St. Louis.....
‡Macon High School 3.....	Macon.....	‡Tipton High School.....	Tipton.....
†Marionville Collegiate In.	Marionville ...	‡Trenton High School 4....	Trenton .....
†Marmaduke Mil. Acad. 4.	Sweet Springs.	†Wentworth Academy 4....	Lexington ....
‡Marshall High School 3...	Marshall.....	†Westport High School 4...	Westport .....
‡Maryville High School 4..	Maryville.....	‡Windsor High School 3....	Windsor .....
‡Mayfield-Smith Academy.	Marble Hill...	Total..... ... 59	

*The figure attached to the name of the school indicates the number of years in the course of study.

†Articulated with all the Courses, Arts, Letters and Science.

‡Articulated with the Course of Letters and Science.

NOTE.—By an order of the Board of Curators, the student who attains the highest rank in the graduating class of any approved school will be permitted to enter the Academic department of the University or the Agricultural and Mechanical College without the payment of the first year's entrance and library fees.

II. THE PROFESSIONAL DEPARTMENTS.

OF THE

University of the State of Missouri.

XV—1. AGRICULTURE AND MECHANIC ARTS.
XVI—2. NORMAL INSTRUCTION.
XVII—3. LAW.
XVIII—4. MEDICINE.
XIX—5. ENGINEERING (Civil, Mechanical and Electrical).
XX—6. MILITARY SCIENCE AND TACTICS.
XXI—7. ART.
XXII—8. ELOCUTION.
XXIII—9. MINING AND METALLURGY.

XV. College of Agriculture and Mechanic Arts.

FACULTY.

RICHARD HENRY JESSE, LL. D., President of the University,
Ex officio Chairman of the Faculty.

EDWARD D. PORTER, A. M., Ph. D.,
Dean of the Faculty and Professor of Agriculture.

PAUL SCHWEITZER, Ph. D.,
Professor of Chemistry.

EDWARD ARCHIBALD ALLEN, Litt. D.,
Professor of English.

WILLIAM BENJAMIN SMITH, A. M., Ph. D.,
Professor of Mathematics.

GEORGE DANA PURINTON, A. M., Ph. D., M. D.,
Professor of Botany, Entomology and Zoology.

GARLAND CARR BROADHEAD, M. S.,
Professor of Geology and Mineralogy.

CHARLES A. KEFFER, M. H.,
Professor of Theoretical and Practical Horticulture.

MILLARD LEWIS LIPSCOMB, A. M.,
Professor of Physics.

SAMUEL A. SMOKE, (Lieutenant U. S. Army),
Professor of Military Science and Tactics.

ALEXANDER MARTIN, A. M., LL. D.,
Lecturer on Agricultural Law.

CHRISTIAN WILLIAM MARX, B. E.,
Superintendent Mechanic Arts.

CHARLES BEMIS REARICK,
Assistant in Drawing and Mechanic Arts.

MELVILLE S. KING, M. Acc'ts.,
Instructor in Commercial School.

FREDERICK C. HICKS, Ph. D.,
Professor of History and Political Science.

HOWELL VAN BLARCOM,
Assistant in Mechanic Arts.

AGRICULTURAL EXPERIMENT STATION.

BOARD OF CONTROL:

The Curators of the University of the State of Missouri.

EXECUTIVE BOARD OF THE UNIVERSITY:

Hon. G. F. ROTHWELL, Hon. B. M. DILLEY, Hon. J. S. CLARKSON.

ADVISORY COUNCIL:

The Governor of the State.
The President of the Board of Curators of the University.
The Master of the State Grange.
The President of the State Board of Agriculture.
The President of the State Horticultnral Society.
The Secretary of the State Horticultural Society.
The Professor of Agriculture in the University of the State of Missouri.
The Professor of Chemistry in the University of the State of Missouri.
The Professor of Veterinary Science in the University of the State of Missouri.
The Professor of Horticulture in the University of the State of Missonri.
The Professor of Geology in the University of the State of Missouri.

OFFICERS OF THE STATION:

EDWARD D. PORTER.....Director and Agriculturist
P. SCHWEITZER.....Chemist
CHARLES A. KEFFER.....Horticulturist
.....Assistant Agriculturist
*PAUL EVANS.....Veterinarian
CHARLES P. FOX.....Assistant Chemist
A. C. VANDIVER.....Farm Superintendent
IRVIN SWITZLER.....Secretary
R B. PRICE.....Treasurer

This Station is made by the act of Congress of 1887, and by the acts of the General Assembly of Missonri, accepting its provisions and by the orders of the Board of Curators of the University of the State of Missouri, a department of the College of Agriculture.

The object of its organization is to aid in acquiring and diffusing among the people of the United States, useful and practical information on subjects connected with agriculture and to promote scientific investigation and experiment respecting the principles and application of agricultural science.

The results of these experimental investigations are given to the public from time to time in a series of bulletins or reports, which are furnished free of charge to any one applying for the same, to the Secretary of the Station, Columbia, Mo.

*Resigned.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

(*A DEPARTMENT OF THE UNIVERSITY.*)

INTRODUCTION.

This College had its origin in the beneficence of National, State and local governments. Its location, objects and aims are defined in the following extracts from the acts of Congress and the laws of the State of Missouri.

Its leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life. (Act of Congress, 1862, Sec. 4.)

There is hereby established the Agricultural and Mechanical College, and a School of Mines and Metallurgy, pr vided for by the grant of the Congress of the United States, as a distinct department of the University of the State of Missouri. (Revised Statutes of Missouri, Sec. 8738.)

To effect the said leading objects of the colleges, as herein established, it is provided that the students and members thereof shall be admitted to the libraries, museums, models, cabinets and apparatus, and to all lectures and instructions of the University which now exist or may hereafter exist, and to all other rights and privileges thereof, in a manner as full and ample as are the students of any other department in said University: and to provide for instruction in military tactics, as herein required, it is enacted that in case a system of military education shall be established by Congress, the State University is hereby required by law to make the necessary provision for carrying out the plan so established in connection with the institution. (Revised Statutes, Sec. 8741, p. 2017.)

The Agricultural and Mechanical College, and the School of Mines and Metallurgy herein provided for, shall have each a separate and distinct faculty, whose officers and professors may be the same in whole or in part as the officers and professors in other colleges and departments of the University. (Revised Statutes of Missouri, Sec. 8742.)

In consideration of the permanent location of the Agricultural and Mechanical College in connection with the State University, the county of Boone shall donate not less than thirty thousand dollars in cash, to be used in erecting such buildings and making such improvements as may be needed for such college, and also for a Mechanical College in connection with the State University, and that the same shall be held for the uses and purposes of said Agricultural and Mechanical College. (Revised Statutes of Missouri, Sec. 8744.)

In accordance with the above provisions, the citizens of Boone county made a donation of ninety thousand dollars for the erection of necessary buildings and the purchase of lands for an experimental farm, and this college was permanently located at Columbia, in connection with the University of the State of Missouri and the School of Mines and Metallurgy at Rolla, under the same control and supported from the same congressional appropriations.

ENDOWMENT OF THE COLLEGE.

The support of the College is derived from:

1. The proceeds of the sales of the public lands donated to Missouri by the act of Congress of July 2, 1862. This State received as her share two hundred and seventy-five thousand acres, of which there have been sold up to date two hundred and sixteen thousand seven hundred and sixty acres, yielding three hundred and twelve thousand dollars, which sum is invested in a State certificate of indebtedness, at five per cent, yielding fifteen thousand six hundred dollars; of this amount one-fourth, or three thousand nine hundred dollars, is by law appropriated to the support of the School of Mines and Metallurgy, at Rolla.
2. The act of Congress of March 2, 1887, known as the "Hatch bill," appropriates fifteen thousand dollars annually to the College of Agriculture, for the purpose of conducting investigations and experiments in various lines of work connected with agriculture. By the acts of Congress making the above appropriations, the expenditures are expressly restricted to the purposes of instruction, illustration and original scientific investigations in agriculture, and not one dollar can be used for the erection or repair of buildings; such facilities are to be provided by the State of Missouri.
3. The annual appropriations from the United States treasury by the act of Congress of August 30, 1890, of fifteen thousand dollars for the years 1889-90, and increased each year by one thousand dollars, until it reaches twenty-five thousand dollars, which shall remain an annual appropriation. Of this amount, one-sixteenth is by law appropriated to the "Lincoln Institute," at Jefferson City, for the education of negro children in agriculture and mechanic arts, and one-fifth of the balance to the School of Mines and Metallurgy, at Rolla.
4. The College building and Experimental farm, donated by the citizens of Boone county, and costing originally ninety thousand dollars.

The above sums, together with the assistance derived from the association of the College of Agriculture with the University, furnish an abundant income for all purposes of instruction and experimentation.

GENERAL INFORMATION.

Applicants for admission to the College of Agriculture and Mechanic Arts should read carefully and follow the directions for new students. (See Index.) The Dean of the College will be found in his office in Agricultural hall at the opening of each semester, from 9 to 12 o' clock, to assist students in their examinations, to direct them to suitable homes, and to advise with them in reference to their classes and studies.

CONDITIONS OF ADMISSION.

Applicants for admission to the Freshman class must be not less than sixteen years of age, and must have completed the "Public School" course of the State.

Applicants for advanced classes in the course must sustain examination in the preparatory studies, and in all the book studies previously pursued by the class which they propose to enter; but if they have pursued such studies in any of the high schools of the State approved by the Faculty, or in other institutions of similar rank, they may receive credit for their standing in those institutions, upon presenting a certificate from the proper officers, showing that they have obtained a passing grade in courses of studies equivalent to those given here.

For the dates for examination and admission see the Calendar, p. 3.

BOARDING.

For board and other expenses, see "Boarding" in the Index.

COURSES OF STUDY.

The courses of study in the College of Agriculture and Mechanic Arts have been selected to fully meet the requirements of the acts of Congress providing for its organization, and while they are especially adapted to prepare students for the industrial pursuits of life, they are also sufficiently comprehensive, and of such a character as to secure the mental discipline and practical experience necessary for other callings and professions, and to qualify pupils for the duties and responsibilities of American citizenship.

AGRICULTURE.

First Year.

First Sem.—Lectures. History of Agriculture. Brief review of the chemical composition and physical properties of air and water. The origin, composition and practical classification of soils; properties, treatment and adaptation of soils to the various branches of husbandry. The improvement of soils, including drainage, subsoiling, fallowing and preparatory tillage. Fertilizers; their composition, preparation and application.

Second Sem.—Lectures on Farm Implements and Machinery, their construction and use. Farm crops; their history and adaptation to different soils and localities. Methods of seeding, cultivation and harvesting.

Second Year.

Second Sem.—Lectures. Farm Animals; their history and characteristics; their breeding, rearing, feeding and management.

Third Year.

First Sem.—Stock-breeding and Dairy Husbandry. These subjects will be taught by both lectures and text-books, with illustrations from the equipment and work of the College farm and Experiment Station.

Fourth Year.

First Sem.—Agricultural Engineering; selection of farms; location and construction of farm buildings; location, construction and repairs of public and private roads.

Second Sem.—History and organization of the system of Agricultural Experiment Stations, and the work accomplished.

Text-books and Books of Reference: Morton's Cyclopædia, Low's Practical Agriculture and Domesticated Animals, Storer's Agriculture, Miles on Stock-breeding, Thomas' Farm Implements, Johnson's "How Crops Grow" and "How Crops Feed," Stewart and Arnold on Dairying, Armsby and Stewart on Cattle Feeding, Bulletins and Reports of the Experiment Stations, and the Herd-books of the various Live-stock Associations.

FACILITIES FOR INSTRUCTION.

Libraries—A valuable library of agricultural books, papers and periodicals has been collected, to which additions are being regularly made. In addition to the Agricultural library, the students in the Agricultural College have access to the General library of the University and to the libraries of all the associated schools.

The Agricultural Museum.—This museum contains a large variety of objects especially adapted to illustrate the work in all departments of agriculture. There is an unusually

fine collection of wool and of cotton fibers, numbering about 600 specimens. These fibers represent most all civilized sections of the world. The wool fibers include the various breeds of sheep, affording as a whole, opportunity to study the influence of climate, soil and breed on wool fiber. Various fiber-producing plants are well represented, and are often accompanied by the various manufactured products. Nearly all of the woods of the State are represented by three feet of the trunk of such tree, so prepared as to show its heart and sap in the rough and under polish. The grasses of the State are represented by 125 species, collected by a graduate of the Agricultural College. In addition to the grasses of the State, the Museum contains one of the finest general collections of grasses in the country. In seeds it contains ninety Japanese varieties, 150 species of American farm seeds, and a great number of varieties of wheat, corn, oats and barley. It has 179 different grades of the milling products of wheat. It contains several hundred models of farm machinery. Sorghum and all its varied products are represented by forty-six objects. A large collection of miscellaneous materials of great value that cannot be enumerated. The list contains many woods and their products from the states of this country and from South America and Europe; also a long list of plants and their products.

In addition to these means of illustration, 318 lantern slides have been already collected of the larger number intended. These are found to be a very great aid to the lecture-room.

The Farm.—The farm is divided into two departments—Farm and Horticultural—both of which were well equipped with buildings, stock and tools of modern character, but owing to a disastrous fire in 1889, the barn, implements and machinery were totally destroyed. They have beeen partially replaced, and it is hoped that necessary appropriations will soon be made to thoroughly equip the farm for the best work. The farm consists of 768 acres of land of varying quality, and is well adapted to its purpose of instruction and experiment. The students will be reqnired to perform such labor on the farm as is deemed necessary for the acquirement of proficiency in the methods taught, and will be compensated according to the character and amount of the work to be done, ten cents being the maximum pay per hour. In addition to this field labor, students will be required to perform farm labor whenever it is desirable to illustrate lecture-room teachings. Such work will be done without pay.

Experiments will be constantly carried on for the farming interests of the State and for lecture-room work. Students will be required to assist in these experiments.

HORTICULTURE.

Second Year, First Semester.—A course in methods of cultivation and management, three exercises a week. The work consists of lectures supplemented with required readings in the library, and frequent practical exercises.

The propagation, transplanting, cultivation, pruning gathering and marketing of fruits and vegetables are the principal topics discussed. Each student is required to make cuttings and grafts, prepare composts, sow seeds, transplant, prune, etc., performing as many of the various horticultural operations as the weather will permit.

Third Year, Second Semester.—Three exercises a week. This course consists of lectures on the theory of horticulture with especial reference to methods of cultivation and management as practiced in the Mississippi Valley. The student having had several courses in biology, physics and chemistry, is prepared for the application of these sciences to plant cultivation. The extensive experiments of the department afford abundant means of illustration.

Fourth Year, First Semester.—Three exercises a week. The work of this semester is divided between Forestry and Landscape Gardening. The course in Forestry consists

ol lectures on the value, characteristics and cultivation of economic species of forest trees, with a discussion of scientific forestry. The lectures are supplemented with required readings, practical work in the forest-tree nursery and excursions to the natural woodlands near Columbia. The latter part of the semester is devoted to a short course of lectures on the laying out of farms and lawns, ornamental plants, planting, etc. The horticultural grounds are designed to illustrate the principles discussed.

Elective Courses.—Students in the Agricultural Department may elect additional work in Horticulture in the third and fourth years, and special courses are provided for such students, each carrying on an independent line of investigation, under the direction of the Professor in charge.

An elective course in Floriculture is offered in the second semester of the fourth year, consisting of the management of hot-houses, forcing flowers and propagation of flowers.

Elective courses in Horticulture, Forestry, Landscape Gardening and Floriculture can be arranged for academic students in the senior year.

FACILITIES FOR INSTRUCTION.

The grounds of the Horticultural Department include 32 acres, containing a well-planted lawn, with shrubbery and flower borders, large collections of all kinds of small fruits and grapes, and representative varieties of stone fruits, apples and pears. Many kinds of all the different vegetables are grown every year. A substantial propagating house, with grafting rooms and a good range of hot-beds, affords ample opportunity for teaching all methods of plant propagation. A complete equipment of spraying apparatus, tools and implements has been secured within the past year. The library contains all the best works on flower, fruit and vegetable culture in the English language, and the leading horticultural periodicals.

The department furnishes a limited amount of labor to its students, at the rate of 10 cents an hour. So far as possible such labor is arranged to illustrate the work of the class-room.

VETERINARY SCIENCE

Embraces an *elementary* and an *advanced* course.

The Elementary course is designed for students in the "Short course" of two years, and will be given by lectures, illustrated by plates, models, skeletons and prepared specimens of the various organs of domestic animals. This course is not designed to prepare young men for veterinarians, but to give them such practical knowledge of the anatomy, physiology and hygiene of domestic animals as will enable them to handle intelligently ordinary farm stock. The course will embrace Comparative and Human Anatomy; the ordinary diseases of domestic animals and their treatment; water supply for stock; ventilation of stables; varieties of food, their value and preparation.

The Advanced course, given during the "Four Year course," will embrace a thorough knowledge of the study, including Anatomy and Physiology, both human and comparative; general Pathology and Histology; practical Medicine and Surgery; Animal Obstetrics; Bacteriology, and the study of contagious and infectious diseases.

MECHANIC ARTS.

COURSE IN MECHANIC ARTS.

First year. WOOD-WORKING AND PATTERN-MAKING.—This course begins with a series of exercises in wood-working, each of which is intended to give the student familiarity with a certain application of a certain tool; and the course of exercises, as a whole, is expected to enable the industrious student easily and exactly to perform any ordinary operation familiar to the carpenter, to the joiner and the pattern-maker. Time permitting, these prescribed exercises are followed by practice in making members of structures, joints, small complete structures, patterns, their core-boxes, and other constructions in wood. Particular attention will be paid to the details of pattern-making.

Second year. FORGING, MOLDING AND FOUNDRY-WORK.—These courses are expected not only to give the student a knowledge of the methods of the blacksmith and the molder, but to give him that manual skill in the handling of tools which will permit him to enter the machine-shop and there quickly to acquire familiarity and skill in the manipulation of the metals, and in the management of both hand and machine tools.

Third year. MACHINE-WORK.—The instruction in the machine-shop, as in the foundry and at the forge, is intended to be carried on in substantially the same manner as in the wood-working course, beginning by a series of graded exercises, which will give the student familiarity with the tools of the craft, and with the operations for the performance of which they are particularly designed, and concluding by practice in the construction of parts of machinery, and, time permitting, in the building of complete machines, which may have a market value, and original work in construction of machines or parts of machines, or special devices.

COURSE IN DRAWING.

First year. Free-hand and Instrumental drawing, which is taught by lectures, and from objects, models, and flat copies, including intersections, development of surfaces, and lettering.

Second year. Mechanical drawing, isometric projections, plans, sections, and elevations of machines, and structures.

Third year Geometrical drawing, tinting, brush and line shading: shades, shadows and original professional work.

FACILITIES FOR INSTRUCTION.

The building for the Department of Mechanic Arts was the first one of the group of five departmental buildings erected by the Board of Cnrators on the University campus during the present year. It has a frontage of 108 feet by a depth of 117 feet. It consists of two stories, and a full basement. It has six shop-rooms 40×40 feet, an exhibit hall 25×40 feet, two offices 16×18 feet, one drawing-room 40×40 feet, two class-rooms 18×22 feet, besides store-room, engine-room, lavatories, etc. The driving power of the machinery is a 90-horse power Corliss engine.

The bnilding will accommodate 400 students by classes of 24 in a class, and two hours to a class each day.

The carpenter and pattern shop has accommodations for four classes of 24 pupils each.

Each pupil has one of the uniform sets of hand or edge tools for his exclusive use, kept in a locked drawer, for the care and safety of which he is held responsible.

The department has 25 speed lathes for wood turning, 25 sets of bench tools, 96 sets of edge tools and as many locked drawers.

The blacksmith-shop is 40×45 feet, and is equipped with 25 forges, 25 anvils and 25 sets of anvil and forge tools.

The blast for the forges is supplied by a power blower, a 48″ exhaust fan (donated by Huyett & Smith, of Detroit, Mich.); keeps the shops cool and free from smoke and gases even when all fires are going.

The machine-shops (40×45 feet) will be equipped during the summer with 13 engine screw-cutting lathes 14″ swing, one 24″ swing engine lathe, one 24″ drill press, one 36″ drill press, one 24″×24″×6′ iron planer, one wet emery grinder, three speed lathes, one 15-inch shaper and bench-room for 12, thus furnishing ample accommodations for a class of 24 at a variety of machine tools.

Two large shops, each 40×45 feet, are as yet unfurnished, but will be equipped with benches and speed lathes and moulding outfit to suit the demands made upon the department in the future.

The drawing-room, 35×45 feet, is exceptionally well lighted from three sides, and is equipped with 32 adjustable drawing tables, furnishing accommodation for four classes of 32 each.

The interior is handsomely furnished.

This room is, perhaps, the best equipped, best lighted and furnished draughting-room in the Mississippi Valley.

The whole building is lighted by a 360-lamp dynamo, situated in engine-room.

No expense has been spared in equipping the shops and draughting-room; nothing but the best the market afforded was purchased; the point kept constantly in view was to equip a school the peer of any in the country, in order to give the students the best examples of workmanship for object lessons. The advantage of thus coming into contact with and using the best tools and machines is at once apparent.

The shop instruction is given by lectures. The instructor at the bench, machine or anvil fully explains the principles to be used or illustrated, and all work involving new principles is executed in the presence of the whole class, giving all the needed information, using drawings and the blackboard.

After every step has been explained the class proceeds to the execution of the work, while the instructor superintends and gives additional help to such as need it.

A series of 25 or 30 graduated exercises is given in each shop. All the shop-work is disciplinary; special trades are not taught, nor are articles manufactured for sale; the value lies in the educational feature of each exercise, that of training the mind and hand to act simultaneously, the one at the will of the other.

The department was organized in accordance with the Morrill act, which recognizes and seeks to foster a high appreciation of the value and dignity of intelligent labor and the worth and respectability of the laboring man.

COMMERCIAL COURSE.

The course of instruction in this School is not designed to take the place of a business college, but is organized with special reference to the wants of the farmer and artisan; it embraces a thorough and systematic course in penmanship, commercial arithmetic, and book-keeping. Students will be drilled in the use of the several account books, and common business forms, in folding and filing papers, and in conducting business correspondence—the object being to lay the foundation for correct business habits and methods, so much wanted by the majority of American farmers.

MILITARY SCIENCE.

An officer of the regular army is detailed by the War department as Professor of Military Science and Tactics, to carry out the provisions of the act of Congress of 1862, which, in endowing this and similar institutions, stipulates that military tactics shall be taught

All students entering this department are required to conform to the rules and regulations prescribed for the Military Department, as contained in the subsequent pages of this Catalogue. The requirements of this department are so adjusted as to harmonize with the regular academic work of the students.

ENGLISH LANGUAGE AND LITERATURE.

The course embraces the study of language, of rhetoric and of literature, arranged as follows : First year, first semester, the Essentials of English; second semester, Rhetoric; second year, first semester, English Language; second semester, American Literature Frequent exercises in writing and composition are required throughout. In the fourth year English is offered as an elective to any who may wish to pursue their studies in the language or literature.

MATHEMATICS.

Algebra (Smith's Elementary), three semesters, thrice weekly.
Plane Geometry (Smith's Modern), three semesters, twice weekly.
Plane Trigonometry (Smith's Clew) and *Surveying*, one semester, five times weekly.
Solid Geometry (Hayward's), one semester, thrice weekly.
See Department of Mathematics, p. 17.

CHEMISTRY.

Second year, *second semester :* Phenomenal Chemistry, 4 hours.
Third year, *first semester :* Applied Chemistry, 3 hours.
Third year, *second semester :* Agricultural Chemistry, 3 hours.
Fourth year, *first semester* : Chemical Laboratory, general chemical work and qualitative analysis.
Fourth year, *second semester :* Chemical Laboratory, Quantitative Chemical Analysis and Experiment Station work.
See Department of Chemistry, p. 23.

BIOLOGY.

First year, *first semester:* Elementary Zoology.

Second semester: Elementary Botany, three times a week.

Third year, *first semester:* Economic Entomology, three times a week. Applied Botany, three times a week.

See Department of Biology, page 27.

GEOLOGY AND MINERALOGY.

For full outline of the studies pursued, see Department of Geology and Mineralogy, page 24.

PHYSICS.

For course of study, text-books and facilities of instruction, see Department of Physics, page 20.

HISTORY AND POLITICAL ECONOMY.

For detailed information in regard to courses, etc., see Department of History and Political Economy, page 16.

COURSES OF INSTRUCTION.

The studies in the College of Agriculture and Mechanic Arts, as above outlined under the various departments, are arranged in the following courses:

I. A THREE MONTHS' WINTER COURSE.

To meet the wants of a class of young men who have not the time to go to college for a regular course of study, but who desire to secure a certain amount of practical instruction, bearing upon the work of the farm, and to aid them directly in its prosecution.

The instruction in this course will be given by means of lectures and practical illustrations; text-books will not be used except for reference.

This course will cover those specific fields of the science and art of agriculture, that will have a direct business value to farmers. Fundamental principles of science, in its relation to agriculture, will be so far presented as to reveal the laws upon which certain operations of agriculture rest, while at the same time a discussion of the world's best methods, as gained by experience, will be required—the equipment of the college, and its farm, affording some aid in the work.

There will be lectures by the teachers of Agriculture, by successful farmers, by the Professors of Horticulture, Veterinary Science, Chemistry, Botany, and by others.

This course will be given during the months of January, February and March. Students entering it must be at least sixteen years of age, and have a good common school education. No entrance examinations will be required, and an entrance fee of $5 will cover all college expenses.

II. A TWO YEARS' COURSE.

This course is designed to take young men of fair average ability, not under sixteen years of age, and with such preparation as can be obtained in good district schools of the State, and give them a sound practical training that will broaden and strengthen them as citizens of the State, while it educates them in such branches of natural science as will cultivate their tastes for industrial pursuits and develop skill in their practice.

This course embraces the First and Second years of the regular Four Years' course, and those students who have not the opportunity of continuing their studies will find this an excellent preparation for practical life. The introduction of the industrial feature, by devoting two hours of each day to work on the farm, in the gardens, in the work-shop or in military drill, will keep up habits of industry, physical training, and that respect for labor which will tend to send the student back to the farm from choice, and not to educate him away from it.

III. A FOUR YEARS' COURSE.

This course is a two years' extension of the previous course, and is designed to give young men an advanced training in the higher departments of collegiate work, and to prepare them to enter upon their avocations in life as successful farmers, superintendents of farms, engineers, veterinary surgeons, botanists, entomologists, agricultural chemists, or lecturers.

Students completing this course will be entitled to the diploma of the University, conferring upon them the degree of B. Agr.

IV. A TWO YEARS' GRADUATE COURSE

Is designed to give a professional training in one or more of the schools of this College to graduates of the College, or of other colleges of the same character.

Young men completing this course and complying with the requirements for graduation will receive the degree of M. Agr.

I. FARMERS' LECTURE COURSE.

The lectures and exercises in this course will begin January 2, 1894, and will be continued daily, except Sunday and Monday, until March 22, 1894. Three lectures at least will be given each day, and the remaining time can be used by the student in work in the shops, laboratories, museums and libraries. Full details of the courses of lectures offered will be given in a separate circular, which will be issued in November, 1893, and sent to all applicants.

II. THE TWO YEARS' COURSE.

First Year.

First Semester.		*Second Semester.*	
Elements of Agriculture	3	Elements of Agriculture	3
Algebra and Geometry	5	Algebra and Geometry	5
English	3	English	3
Commercial Course	3	Commercial Course	3
Elementary Zoology	3	Elementary Botany	3
Shop-work and Drawing	5	Shop-work and Drawing	5
Military Science (optional).		Military Science (optional).	

Second Year.

First Semester.		*Second Semester.*	
Horticulture	3	Agriculture	2
Algebra and Geometry	5	Trigonometry and Surveying	5
English	5	Elementary Chemistry	4
Elementary Physics	3	Elementary Veterinary Science	3
Shop-work and Drawing	4	Shop-work and Drawing	5
Military Science (optional).		Military Science (optional).	

The above will constitute the "Two Years' course," and students completing it will be entitled to a certificate of the College, testifying to that fact.

This course is preparatory to the "*Degree*," or

III. THE FOUR YEARS' COURSE.

Third Year.

First Semester.		*Second Semester.*	
Advanced Agriculture	3	Horticulture	3
Economic Entomology	3	Agric. Chemistry	3
Organic Chemistry	3	Advanced Physics	4
Mineralogy	4	Veterinary Science	3
Applied Botany	3	Elective	5
Chemical Laboratory	2		

Fourth Year.

First Semester.		*Second Semester.*	
Forestry and Landscape Gardening	3	Geology	3
Physics	2	Veterinary Science	3
Farm Economy	3	Experiment Station Work	3
Veterinary Science	3	Economics	3
History	2	Elective	6
Elective	5		

Work done in the College of Agriculture and Mechanic Arts during the year 1892-3.

As this College was reorganized in September, 1891, only two classes have been admitted.

The following table exhibits the whole number of students in attendance, both *regular* and *special*, from September 13, 1892, to June 1, 1893, also the number in the several classes:

Class.	Regular.	Special.	Total.
Agriculture	42	5	47
Horticulture	8	3	11
Mechanic Arts	38	58	96
Drawing	38	111	149
Mathematics	40	1	41
English Language	34	....	34
Civil Government	19	....	19
Commercial Course	30	109	139
Anatomy, Physiology and Hygiene	20	....	20
Veterinary Science	11	4	15
Military Science and Tactics	17	....	17
Number of students in all classes			630
Deduct all counted more than once			297
Total number of individual students			333

XVI. Normal Department.

FACULTY.

RICHARD HENRY JESSE, LL. D.,
President.

JOSEPH PHILIP BLANTON, A. M.,
Professor of the Theory and Practice of Teaching.

PAUL SCHWEITZER, Ph. D.,
Professor of Chemistry.

JAMES SHANNON BLACKWELL, M. A., Ph. D.,
Professor of Semitic and Modern Languages.

JOHN CARLETON JONES, A. M., Ph. D.,
Professor of Latin Language and Literature.

EDWARD ARCHIBALD ALLEN, Litt. D.,
Professor of English Language and Literature.

WILLIAM BENJAMIN SMITH, A. M., Ph. D.,
Professor of Mathematics and Astronomy.

GEORGE DANA PURINTON, A. M., M. D., Ph. D.,
Professor of Biology and Curator of the Museum.

GARLAND CARR BROADHEAD, M. S.,
Professor of Geology and Mineralogy

MILLARD LEWIS LIPSCOMB, A. M.,
Professor of Physics.

WILLIAM GWATHMEY MANLY, M. A.,
Professor of Greek Language and Literature.

JOHN WALDO CONNAWAY, M. C. D., M. D.,
Professor of Physiology.

FREDERICK CHARLES HICKS, Ph. D.,
Professor of History and Political Economy.

CHRISTIAN WILLIAM MARX, B. E.,
Superintendent of Department of Mechanic Arts.

CHARLES BEMIS REARICK,
Assistant in Drawing and Mechanic Arts.

MELVILLE SINCLAIR KING, M. Acc'ts,
Instructor in Commercial School.

Professor of Elocution.

Professor of Philosophy (to be appointed soon).

COURSES OF INSTRUCTION.

There are two distinct courses, one Elementary and one Advanced.

The Elementary course extends over two years, and is intended to prepare teachers for the public schools of the State. Graduates in this course receive a State certificate, which entitles the holder to teach for a period of two years from the date of graduation.

ELEMENTARY COURSE.

	JUNIOR YEAR.	No. times per week.
First Semester	*Elocution	2
	English Language (third semester)	5
	Algebra and Plane Geometry (third semester)	5
	Physiology and Hygiene	3
	Elementary Zoology	2
	*Drawing	2
Second Semester	American Literature	2
	Physical Geography	5
	Elementary Botany	3
	Rhetoric	5
	SENIOR YEAR.	
First Semester	English History	2
	English Literature	3
	Elementary Physics	3
	Book-keeping and Penmanship	3
	†Pedagogics	5
	U. S. History	3
Second Semester	English Literature	3
	Chemistry	4
	Rhetoric	2
	Civil Government	3
	†Pedagogics	4

The Legislature at its last session having repealed the law requiring preparatory courses in the University, the subjects in the first year of the above courses will not be taught during the session of 1893-94, and the entire course, with the exception of the Pedagogics, will be abolished after that session.

All graduates of the approved High Schools and Academies (a list of which appears on page 35) who shall complete the course in Pedagogics prescribed above will be granted a certificate by the University, which authorizes them to teach in the public schools of Missouri for a period of two years. Students who take the course in Pedagogics, requiring five hours a week throughout the year, must take thirteen hours' additional work from the subjects prescribed for the Freshman year in any one of the three Academic courses found on page 31.

ADVANCED COURSE.

The following Courses two hours each per week in the Junior Year and three hours per week in the Senior Year, are prescribed to candidates for the degree of Bachelor of Pedagogics. Graduates of approved Colleges may, on satisfactorily completing these Courses, and on recommendation of the Faculty, receive this degree with a life certificate

*Elocution and drawing are required in all semesters, two hours a week, except the first semester of the Senior year.

†Pedagogics in the above course embraces the study of educational psychology, the history of educational theories and the organization and management of schools.

to teach in any public school in Missouri. The degree is also conferred upon regular graduates in any of the three Academic Courses (see page 31) who may elect during the Junior and Senior Years any four properly selected Courses in this department, aggregating five hours a week for two semesters or one year.

The following Courses are offered:

PRESCRIBED.

1. *First semester*, Junior Year: History of Education. Lectures and Recitations. Texts: Compayre's History of Pedagogy, Quick's Educational Reformers.

2. *Second semester*, Junior Year: Theoretical and Critical. A consideration of the philosophic basis of education. Lectures and Recitations. Texts: Compayre's Lectures on Pedagogy, Rosmini's Method in Education.

3. *First semester*, Senior Year: Philosophy of Education. Text: Rosenkranz's Philosophy of Education, with an examination of Herbart's System.

4. *Second semester*, Senior Year: Application of the preceding principles to the various phases of actual instruction and school management. Lectures and Recitations. Texts: Compayre's Lectures on Teaching, Page on Teaching.

ELECTIVES.

5. *First semester*, Junior Year: School Systems of Europe. Lectures and Recitations. Text: Gill's Systems of Education, Klemm's European Schools.

6. *Second semester*, Junior Year: Philosophy of the Kindergarten. Lectures and Recitations; a thorough examination by the class of Froebel's Education of Man will be made.

7. *First semester*, Senior Year: A thorough examination of Herbert Spencer's Educational Theories.

8. *Second semester*, Senior Year: A comparative study of the school systems of the cities and states of the United States. Boone's Education in the United States will be read, and many of the circulars of information issued by the Bureau of Education will be available in pursuing this investigation.

The above Elective courses are each two hours per week in the Junior Year and three hours per week in the Senior.

9. Teachers' Course: Special courses of instruction are offered by professors in the University to teachers of the State free of all charges, beginning April 1, 1893, and continuing two months. The following course in Pedagogics is among this number:

I. Theoretical. A series of lectures and recitations on Educational Psychology.

II. Historical. A study of the history of Theories of Education that have prevailed in different ages and countries. A well-selected pedagogical library will be at the service of the teachers in doing this work, and their investigations will be directed by the professor in charge.

III. Practical. Instruction in the organization and management of schools. The value and object of Teachers' Institutes. The educational value of the various subjects in the common school curriculum. Can the time usually devoted to common school subjects be shortened and the pupil enter upon study of high school subjects at an earlier period? The public school system of Missouri The school law, etc. The above topics will be discussed, and if time permit, others of a kindred nature.

Something of the above nature and scope will be offered in 1894, beginning April 1st, announcement of which will be made during the second semester by circulars to teachers. No fees are charged for any of these special courses.

XVII. Department of Law.

FACULTY.

RICHARD HENRY JESSE, LL. D.,
President of the University.

ALEXANDER MARTIN, A. M., LL. D.,
Dean of the Faculty and Professor of Law.

JAMES AULL YANTIS, LL. B.,
Professor of Law.

JOHN DAVIDSON LAWSON, B. C. L., LL. D.,
Professor of Law.

SPECIAL LECTURERS.

ANDREW WALKER McALESTER, A. M., M. D., Dean of the Medical Department.
Lecturer on Medical Jurisprudence.

PAUL SCHWEITZER, Ph. D.,
Lecturer on Toxicology.

FREDERICK CHARLES HICKS, Ph. D.,
Lecturer on Theory of Jurisprudence.

HON. GEORGE B. MACFARLANE, Judge of the Supreme Court of Missouri,
Non-resident Lecturer on Criminal Law.

HON. ELMER B. ADAMS, Ex-Judge of Circuit Court of St. Louis,
Non-resident Lecturer on the Law of Wills and Administration.

HON. JAMES A. SEDDON, A. M., LL. B., Ex-Judge of Circuit Court of St. Louis,
Non-resident Lecturer on Commercial Law.

HON. UPTON M. YOUNG, of the St. Louis Bar,
Non-resident Lecturer on Equity Jurisprudence.

HISTORICAL STATEMENT.

The Law School was formally opened as a department of the University on the first Monday of October, 1872, since which time it has continued with uninterrupted progress and increasing success. Connected with its advancement in the past will be found the names of Judge Philemon Bliss, who, in his day, was a Judge of the Supreme Court of Missouri, and author of the well-known treatise on Code Pleading: Professor C. G. Tiedeman, author of numerous valuable treatises on different subjects of the law, written during his connection with the school: Hon. Boyle Gordon and Hon. Odon Guitar, eminent practitioners at the bar of Missouri.

ADVANTAGES.

The advantages now offered by the University of Missouri for instruction in the science and practice of common law, as prevailing in the United States, are not excelled in any university in the west.

Accommodations.—Since the destruction of the main University building by fire, January 9, 1892, the Curators have erected a large, commodious structure for the use of the Law Department. It contains a spacious library-room, two large lecture-rooms, moot court and club-rooms, quiz-rooms, along with offices for the professors. The department entered into possession of their new quarters February 21, 1893.

Lectures and recitations begin in both lecture-rooms at 9 o'clock a. m., and close at 1 o'clock p. m. daily. Moot courts are held in the lecture-rooms or library-room every Thursday at 3 o'clock p. m. Lectures and recitations are held in the afternoon when necessary to meet the requirements of the department.

Libraries.—The library of the Law Department consists at present of a large collection of reports, and treatises on every subject of the law. It is increasing rapidly every year. All the decisions of the American courts are received at the library as soon as published. A complete set of digests of decisions and reports is kept up, so that the latest expressions of authority are brought within reach of the students and professors. Members of the Law Department have access to the general library of the University. The Law library was mostly saved from loss by the fire, and has been restored and increased during the past year.

Academic Facilities.—The connection of the Law Department with the University enables the law student to pursue any branch of instruction in the Academic Department which does not interfere with his legal studies, without additional charge. Some of the members of every class have found it convenient to pursue studies in the Academic Department, such as Latin, French, Logic, Rhetoric, Military Science, Political Economy and History, etc.

University Societies.—Members of the Law Department are eligible to membership in the two great literary societies of long standing in the University known as the "Athenæan" and "Union Literary." They are also eligible to membership in the "Bliss Lyceum," a society founded in connection with the Law Department, and to which members of that department alone are admitted.

These societies in the University are its nurseries of oratory, debate and parliamentary law.

METHODS OF INSTRUCTION.

LECTURES, RECITATIONS, EXAMINATIONS AND STUDY OF TREATISES AND CASES.

The first benefit inuring to the student who enters a good law school is to learn how to study law, as distinguished from merely reading it.

A student in an attorney's office is too apt to continue, in his study of law, the superficial habit acquired by him in the perusal of newspapers, literary periodicals and novels.

On entering the school he is instructed in the proper method of reading treatises and reports of cases; of examining questions of law, taking notes of lectures, and of handling digests, dictionaries and compilations of the law

The Law Faculty is satisfied from experience that the highest results cannot be reached by lectures alone, however clear and thorough they may be; but that the students, as far as possible, should be required to study the text of some approved treatise on the subject of instruction, and to examine critically well-considered cases illustrating the principles discussed in the lecture-room. For the purpose of ascertaining the progress of the student, and impressing upon him the necessity and advantages of precise and definite knowledge of the subject upon which he has received instruction, he should be required

to stand frequent recitations and examinations on the work accomplished by him. He should also be required to take notes of the substance of the lectures, and of the cases furnished by the professor for his investigation. In this manner, it is believed, he will receive the full advantages of the lecture and recitation methods of instruction as applied to the study of treatises and the examination and analysis of cases. A combination of these methods has, in the opinion of the Faculty, produced the most satisfactory results.

MOOT COURT.

A Moot Court is held every Thursday, in which members from all the classes participate. In this court the matters discussed arise in some supposed cause. Regular pleadings are required, and when the cause is supposed to be in the Supreme Court, in addition to the pleadings, papers are prepared, necessary in actual practice, as the writ of errors, assignment of errors, bill of exceptions embodying the instructions to the jury, ruling upon the admission or exclusion of evidence, motions for new trial or in arrest, etc Briefs of points and authorities must also be submitted and filed. A member of the Faculty presides at the trial, determining all preliminary and incidental motions. A member of the Senior class or Graduate class is called to sit as special judge in each cause, who, the next week, gives his opinion in writing, subject to appeal to the member of the Faculty present at the trial.

COURSES OF STUDY.

The principal object of the courses of study adopted in the school is to qualify its graduates for an efficient and successful discharge of their duties as licensed attorneys. It has never been within the aim of the school to cram its students for the purpose of qualifying them to pass the special examinations which may possibly take place at the bars to which they may seek admission. The courses of study have been adopted with the view of familiarizing the successful candidate for a degree with the principles of substantive law, and the law of remedy and procedure, as prevailing in American jurisprudence After a short study of the statutes and decisions of the State in which he expects to settle, he will deserve admission to the bar. As the degree of LL. B. from this school entitles the graduate to admission to the bar of the State of Missouri, the Faculty cannot overlook the fact that a fair knowledge of the general statutes of the State, and of the modifications which the common law has undergone in the decisions of the courts, is an essential qualification for admission to its bar. But, as there is great similarity in the general statute and judiciary law of the Western, Northwestern and Southwestern states, it is believed that what may be learned in that respect will be of benefit to a student settling in any of said states.

UNDER-GRADUATE COURSE.

The full under-graduate course is for a term of two years. The students in it constitute two classes—Juniors and Seniors. Instruction is given daily to these classes, in the form of lectures, recitations and examinations upon the text-books recommended and leading cases furnished by the Faculty. Every Thursday they participate in the exercises of a Moot Court.

The Junior class will receive instruction on the following subjects:

Elementary Law, Law of Torts:
By Professor YANTIS.

Contracts, Personal Property, Bailments, Sales, Domestic Relations, Criminal Law:
By Professor LAWSON and Special Lecturers.

Negotiable Instruments:
By the DEAN and Special Lecturers.

The Senior class will receive instruction on the following subjects:

Real Property, Evidence, Corporations:
By Professor YANTIS and Special Lecturers.

Equity Jurisprudence, Pleading and Practice, Admiralty and Maritime Law, Constitutional Law, International Law:
By the DEAN and Special Lecturers.

Agency, Partnership, Insurance:
By Professor LAWSON.

Law of Wills and Administration:
By Special Lecturers.

Theory of Jurisprudence:
By Professor HICKS.

TEXT-BOOKS.

The text-books recommended are as follows:

For the Junior year—

Robinson's Elementary Law in connection with Blackstone.
Lawson on Contracts.
Browne on Domestic Relations.
Bigelow on Torts.
Tiedeman on Sales.
Bigelow on Notes and Bills.
Schouler on Bailments.
Darlington on Personal Property.
Lawson's Leading Cases in Criminal Law

For the Senior year—

Bispham's Principles of Equity.
Tiedeman on Real Property.
Bliss on Code Pleading.
Greenleaf on Evidence (1st vol.).
Taylor on Corporations.
Richards on Insurance.
Pollock on Partnership.
Mechem on Agency.
Wœrner on Administration.
Cooley's Principles of Constitutional Law.
Woolsey's International Law.
Desty on Shipping and Admiralty.
Desty's Federal Procedure.

GRADUATE COURSE.

This course is open to graduates of the two years' course in the Law Department, and to graduates from other law schools who have completed a similar or equivalent course.

The object of this course is to provide the future practitioner with a more extended and practical knowledge of the most important subjects embraced in modern law, than the limited time of the under-graduate course will admit of. It is also intended to afford him assistance in prosecuting the study of any particular subject or branch of law which he expects to follow in his future practice.

The course of instruction will embrace lectures and recitations on the following subjects:

Constitutional Law.
Corporations.
Trusts.
Patents.
Copyrights.
Law of Homicide.
Theory of Jurisprudence.

The student in this course will be allowed to select any special subject in law for extended examination and study, to be prosecuted concurrently with the subjects embraced in the course. His examination and study will be directed by the Faculty, who will advise him of the books and cases to consult, and afford him assistance and counsel when called upon

It is believed that many licensed attorneys, beginning or about to begin practice, will find it to their advantage to take the instruction in this course as special students.

The text-books recommended for the Graduate course are as follows:

Lawson on Usages and Customs.
Cooley on Constitutional Limitations.
Miller on the Constitution of the United States.
Lewin on Trusts.
May on Insurance.
Walker on Patents.
Bishop on Criminal Law.
Morwitz on Corporations.
Holland's Jurisprudence.

SPECIAL COURSES.

The students who do not wish to take any of the full courses, and who are not candidates for any of the degrees awarded to those who have successfully completed said courses, will be permitted to take an elective course, and pursue any branches of study and instruction given in the department, the exercises of which do not conflict with each other. They will be classed as special students, and will receive certificates from the Faculty of the time spent at the school, and the work accomplished by them. Those desiring to become special students are required to advise with the Faculty before fixing upon the special studies which they expect to pursue.

QUALIFICATIONS FOR ADMISSION.

UNDER-GRADUATE COURSE.

Junior Class.—For admission to the Junior class, no examination in law is imposed. In respect to academical education, candidates are advised to complete, if they can, a full academic or collegiate course. A good common-school education at least must be possessed by the candidate. The Faculty must be satisfied of this by certificates to that effect from instructors in the public schools, or by examination of the candidates conducted by themselves, or by professors in the English department of the University. If unknown to the Faculty, the candidate must bring satisfactory testimonials of good character

Candidates will be admitted to the Junior class at any time during the Junior year, upon passing an examination upon the work accomplished by the class at the date of the examination.

Senior Class —No one will be admitted to the Senior class as a candidate for a degree unless he applies at the beginning of the year, and has sustained, or is able to sustain, an examination upon the studies of the Junior year. In exceptional cases, upon failure in one or two branches only, the examination, as to those branches, may be postponed to some period during the term, and the applicant will be admitted to the class as a candidate for a degree, upon the condition of sustaining a satisfactory examination on those branches at the time appointed for it.

GRADUATE COURSE.

Graduate Class.—No one will be admitted to this class as a candidate for the degree of LL. M., unless he holds the degree of LL B from the Law Department of this University, or is a graduate of some other law school, whose course of instruction and study, upon which his degree is predicated, is equivalent to the course of instruction and study required for the corresponding degree in the Law Department of this University.

No admission to the Senior or Graduate class will he permitted after two weeks from the commencement of the year.

SPECIAL COURSE.

The same qualifications as to a common-school education and character, required of candidates for the Junior class, will be exacted of students admitted to pursue special courses selected hy them.

DEGREES AND HONORS.

Members of the Senior class, who have successfully passed the examinations of the Senior year, will be entitled to receive from the Board of Curators the degree of Bachelor of Laws. Members of the graduate class who have successfully passed the examinations belonging to the graduate course will be entitled to receive the degree of Master of Laws.

Whenever a candidate for graduation attains a high degree of excellence in his class work, the degree of Bachelor of Laws or or Master of Laws will be conferred upon him with distinction, and the words *cum laude* will he incorporated in the diploma. In determining the required degree of excellence, the student's conduct as a gentleman, as well as his attainments as a scholar, will he taken into consideration.

Only those Seniors who shall have attained first rank with distinction shall he eligible to the honor of valedictorian at Commencement.

The members of the Senior class are all invited to write essays upon some subject in law, assigned to them hy the Faculty, before January 1 of each year. The essays so written will he submitted to a committee of judges charged with the duty of designating the hest two of said essays. The best one of the two thus designated will he read hy the author at Commencement exercises, and hoth of them will be recommended for publication. Students not writing essays as aforesaid shall not he eligible to any of the honors and distinctions heretofore mentioned as in addition to the right of graduation, unless they have been excused therefrom for good cause.

A prize of fifty dollars, provided in the endowment fund of the late Hon. James S. Rollins, is awarded each year to the member of the Junior Law class who has shown himself entitled thereto hy his superior scholarship and moral conduct.

The prize will he awarded at the Commencement following the close of the Junior year.

All who receive the degree of Bachelor of Laws are by law admitted, without further examination, to practice in all the courts of the State of Missouri.

ATTENDANCE.

The attendance in the Law department for the year ending June 1, 1893, numhered 57. For list of students attending during the year, see "Students," in the Index.

DISCIPLINE.

The Faculty requires every student to pay strict attention to the duties assumed by him, and to be honorable and considerate in his intercourse with the Faculty, his fellow students and citizens. This is the only rule of hehavior, the highest penalty for violation of which is expulsion.

OPENING AND CLOSING.

The Law department opens on the second Tuesday in September, and closes on the first Thursday in June of each year. The present year ends June 1, 1893. The year next succeeding the present one will open Tuesday, September 12, 1893.

EXAMINATIONS FOR ADMISSION.

Examinations for admission will be held in the lecture-rooms on the second Tuesday in September, at 11 o'clock a. m., and at the same hour on the first day of collegiate exercises after the first day of January.

Examinations for admission will be accorded at other times upon request to suit the convenience of applicants.

TUITION CHARGES AND EXPENSES.

For information as to the tuition charges and expenses of the Law department, see "Fees and Expenses."

For information and catalogues, address

ALEXANDER MARTIN, Dean,
Columbia, Mo.

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XVIII. Department of Medicine.

FACULTY.

RICHARD HENRY JESSE, LL. D.,
President of University.

ANDREW WALKER McALESTER, A. M., M. D., Dean of Faculty,
Professor of Surgery and Obstetrics.

PAUL SCHWEITZER, Ph. D ,
Professor of Chemistry and Toxicology.

WOODSON MOSS, M. D.,
Professor of Practice of Medicine and Anatomy.

GEORGE DANA PURINTON, A. M., M. D., Ph. D.,
Professor of Medical Botany.

MILLARD LEWIS LIPSCOMB, A. M.,
Professor of Physics.

JOHN WALDO CONNAWAY, M. D. C., M. D.,
Professor of Physiology (Human and Comparative).

†PAUL EVANS, M. D.,
Professor of Histology and Bacteriology.

SPECIAL LECTURERS.

PAUL PAQUIN, M. D.,
Lecturer on Bacteriology.

A. B. MILLER, A. M., M. D.,
Lecturer on Gynecology.

G. R. HIGHSMITH, M. D.,
Lecturer on Abdominal Surgery.

M. D. LEWIS, M. D.,
Lecturer on Practice of Medicine.

J. L. CORLEW, M. D.,
Lecturer on Obstetrics.

F. P. HULEN, M. D.,
Lecturer on Diseases of Women and Children.

W. A. NORRIS, M. D.,
Assistant Demonstrator of Anatomy.

†Resigned.

REQUIREMENTS FOR ADMISSION.

The requirements for admission shall be the same as in the Academic departments.

Students are strongly urged to take degrees in Art or Science before entering this department.

COURSE OF INSTRUCTION.

First Year—Anatomy (osteology and dissecting), Physiology (chemical, nutritive and reproductive), Chemistry, Physics, Normal Histology, Microscopy, with mounting and staining normal tissues; General Therapeutics.

Second Year—Anatomy, general and descriptive, and dissections; Physiology, Nervous System, Chemistry, Microscopy, mounting and staining bacteria; Therapeutics Theory and Practice of Medicine, Surgery and Obstetrics.

Third Year—Theory and Practice of Medicine, Clinical Medicine, Physical Diagnosis, Surgery, Clinical Surgery: Anatomy, surgical and topographical: Obstetrics, Therapeutics, Gynecology, Diseases of Children; Diseases of eye, ear, nose and throat; Sanitary Science; Medical Jurisprudence; Work in Bacteriological Laboratory.

PLAN OF INSTRUCTION.

Instruction is given by lectures, recitations, clinical teaching and laboratory work.

The length of the session, nine months, renders it practicable to distribute the different branches among the teachers in the most satisfactory manner, and in their natural order and succession. The student is thoroughly drilled each day by examinations upon the lectures of the previous day, and by recitations from text-books.

By this method of teaching, it is claimed that we avoid the process of cramming—a deleterious practice, too prevalent in the general system of medical education. We believe that the proposed method of teaching will do more to elevate the standard of medical education, and to exalt the dignity of profession, than any other measure that could be adopted.

Besides the ordinary instruction in chemistry, a special course is given to advanced students in Toxicology, the material and appliances for teaching which are not excelled by any institution in the United States.

The students are also taught the use of the microscope, in relation to both pathological and physiological studies. The methods of bacteriological investigation are taught by practical work in the laboratory. Besides the microscope, the department has the benefit of two superior magic lanterns. For illustrating lectures with the above instruments, there are over 500 slides.

Among the advantages offered by this school is the privilege granted without further cost to all students who enter the Medical department, of pursuing such studies as they may desire in the academic course. Academic students may take Anatomy and Physiology in the medical course, preparatory to entering on the full medical course after graduating in Art or Science. Such students are admitted to the Second year's medical class.

This department is equipped with models in plastic and papier mache, plaster casts, drawings and other appliances for the illustration of the lectures on anatomy, surgery and physiology.

Among the many valuable preparations for demonstrating anatomy and surgery is Dr. Auzoux's Plastic man, a complete and accurate model of the male human body. The figure is five feet ten inches in height, and is composed of ninety-two separate parts, which may be detached from one another. It exhibits over two thousand details of the viscera, muscles, nerves, blood-vessels, etc., in short, all that is usually embraced in a complete treatise on anatomy.

Also, Anzoux's female pelvis, with the external organs of generation, the lumbar vertebræ, diaphragm, muscles, aponeuroses of the perinenm, vessels and nerves.

Also, his collection illustrating Ovology. These models are on an enlarged scale, and exhibit the modification of the ovum, envelopes and vitelline vesicle, etc.

In addition to the above are eight uteri, in plastic, containing the products of conception at the first, second, third, fourth, eighth and ninth months, with examples of tubular and ovarian pregnancy.

Another model, to which we deem it proper to call attention, is Dr. Auzoux's synthetic model of the brain, which exhibits the structure of that organ upon an immensely magnified scale. Designed in conformity with the new anatomical indications furnished by Dr Luys, this model presents a resume of all the researches of ancient and modern anatomists. This entirely new method of studying the brain opens an immense field for the research of physicians and philosophers. The models of the eye and ear are greatly enlarged and very accurate, showing the complete gross structure of these organs, as described by modern anatomists. The preparation of the head is most admirably executed. The bones are disarticulated and mounted according to the method of Beauchene.

Besides these invaluable models and preparations, we have a complete set of the German anatomical models, in plastic, made at Leipzig.

PRACTICAL ANATOMY.

Every facility is afforded the student for the study of practical anatomy. Adequate provision is made for a supply of subjects amply sufficient for the number of students. The dissecting rooms are large and well ventilated, and will be open during the whole winter season, where, under the guidance of the demonstrators, the student may, by dissection, acquire a practical knowledge of the human body in all parts.

CLINICS.

The number and variety of Medical and Surgical Clinics are ample for purposes of clinical instruction.

DEGREES.

Upon a satisfactory completion of the above course, the degree of Doctor of Medicine will be conferred.

In addition to the ordinary degree of M. D., we recommend the degree of "M. D. *cum laude*" to all students having the degree of A. B. or S. B.

EXAMINATIONS.

Students must pass in the work of each class before admission to an advanced class. For information in regard to tuition charges, fees, etc., see "Fees and Expenses."

REQUIREMENTS FOR GRADUATION.

1. The candidate must have completed the course prescribed and passed a satisfactory examination thereon.

2. He must be twenty-one years of age, and must exhibit to the Faculty satisfactory evidence of possessing a good character.

3. His last course of lectures must have been attended in this department.

4. He must have been regular in attendance on lectures and recitations.

5. He must have pursued the study of practical anatomy, under the supervision of the demonstrator, during his pupilage in this department.

6. He must notify the Dean of the Faculty before the 8th of April of his intention to become a candidate for graduation at the ensuing Commencement.

7. Every candidate must appear before the members of the Faculty for examination in the various branches of medicine taught in this department at the time appointed for such examinations.

8. Conformity to the general laws and rules established by the Curators and the Faculty for the government of the University, discharge of duties, regular attendance upon lectures and in laboratories are required of all students.

9. If a candidate is rejected, his diploma fee will be returned to him.

For flagrant violation of the rules and laws established for the government of the University, a professional student may be expelled from the Institution. In such a case the fees on his entrance will not be returned to him.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Anatomy—*Gray*, Wilson, Leidy.
Surgery—*Ashurst*, Gross, Erichsen.
Physiology—*Dalton*, Flint, Foster, Kirke.
Principles and Practice of Medicine—*Flint*, Niemeyer, Watson.
Materia Medica—*Bartholow*, Biddle, Farquharson.
Chemistry—
Obstetrics—*Playfair*, Lusk.
Diseases of Women and Children—*Thomas*, Smith.
Histology—*Prudden's* Normal, Rindfleish's Pathological Histology.
Pathology—*Ziegler*, Paget, Gross.
Toxicology—*Taylor*.
Ophthalmology—*Wells*, Williams.
Otology—*Toynbee*, Turnbull.
Medical Jurisprudence—Taylor, *Tidy*.
Nervous Diseases—*Ranney*, Hammond, Reynolds.
Diseases of the Heart and Lungs—*Flint*, Loomis

Every student should provide himself with a medical dictionary (Dunglison's is suggested). The text-books are designated by *italics*.

All works used as text-books in the school, as well as books of reference, can be purchased here on as favorable terms as in any of the eastern cities.

For any further information in relation to the school, address

A. W. McALESTER, M. D.,
Dean of Medical Faculty, Columbia, Mo.

For catalogues, address

WOODSON MOSS, M. D.,
Secretary Medical Faculty, Columbia, Mo.

XIX. Department of Engineering.

FACULTY.

RICHARD HENRY JESSE, LL. D.,
President of the University.

RICHARD HADEN HOOD, C. E.,
Professor of Civil Engineering.

WILLIAM SHRADER, B. S., Ph. D.,
Professor of Electrical Engineering and Assistant Professor of Physics.

CHRISTIAN WILLIAM MARX, B. E.,
Professor of Mechanical Engineering and Superintendent of Mechanic Arts.

†ALEXANDER MAITLAND, C. E.,
Assistont Professor of Civil Engineering.

JAMES SHANNON BLACKWELL, M. A., Ph. D.,
Professor of Semitic and Modern Languages.

PAUL SCHWEITZER, Ph. D.,
Professor of Chemistry

EDWARD ARCHIBALD ALLEN, Litt. D.,
Professor of English Language and Literature.

WILLIAM BENJAMIN SMITH, A. M., Ph. D.,
Professor of Mothematics ond Astronomy.

GEORGE DANA PURINTON, A. M., M. D., Ph. D.,
Professor of Economic Botany and Curator of the Museum.

GARLAND CARR BROADHEAD, M. S.,
Professor of Geology and Mineralogy.

MILLARD LEWIS LIPSCOMB, A. M.,
Professor of Physics.

MILTON UPDEGRAFF, M. S., B. C. E.,
Assistant Professor of Mathematics and Astronomy, and Director of the Observatory.

CHARLES BEMIS REARICK,
Assistant in Drawing and Mechonic Arts.

SAMUEL A. SMOKE (Lieutenant U. S. Army),
Professor of Military Science and Tactics.

HOWELL VAN BLARCOM,
Assistant in Mechanic Arts.

†Resigned.

ENGINEERING COURSES.

Three courses are offered, Civil, Electrical and Mechanical Engineering, which lead to the degrees of C. E., E. E. and Mech. E.

The first year is the same for all these courses.

Requirements for Admission to the Freshman Year: Arithmetic, Plane Geometry, Algebra (first 18 chapters of Smith's Treatise, or its equivalent by other authors), English Grammar and Composition, Geography and United States History.

1. CIVIL ENGINEERING.

R. H. Hood, Professor.

COURSE IN CIVIL ENGINEERING.

Freshman Year.

First Semester.		*Second Semester.*	
Solid Geometry and Algebra	5	Trigonometry and Algebra	5
English	3	English	2
French or German	3	French or German	3
(1) Drawing and Projections	5	(2) Drawing	3
Shop, Wood-work	2	Chemistry	4
		Shop, Wood-work	2

Summer Thesis.

Sophomore Year.

First Semester.		*Second Semester.*	
(3) Descriptive Geometry	5	Physics	4
(5) Drawing	2	(4) Drawing	3
(7) Chain and Compass Surveying	4	Chemistry	3
English	3	Analytic Geometry	4
Analytic Geometry	3	Botany	2
Shop, Patterns and Turning	2	Shop, Blacksmithing, Filing, etc	2

Summer Thesis.

Junior Year.

First Semester.		*Second Semester.*	
Differential and Integral Calculus	6	(6) Applied Mechanics	5
Spherical and Practical Astronomy	3	(8) Surveying and Geodesy	5
Physics—Heat	2	Thermo-dynamics	2
Mineralogy and Lithology	4	Geology	3
(9) Machine Design and Construction	3	Electricity and Magnetism	4

Summer Thesis.

Senior Year.

First Semester.		*Second Semester.*	
(11) Applied Mechanics	5	(10) Stone Cutting, Theory	2
(13) Hydraulics and Hydr. Motors	3	(12) Stone Cutting, Plates	2
(15) Strength of Materials	3	(14) Railroads, Roads and Canals	5
(17) Steam Engine	3	(16) Bridges, Roofs, Structures, etc.	5
(19) Inspection of Eng'r Materials	1	(18) Specifications and Contracts	1
Physical Experiments	1	(20) City and Sanitary Engineering	2
Metallurgy of Iron and Steel	2		

Graduation Thesis.

The figures in parenthesis refer to the synopsis found below—odd numbers for first semester and even for second semester subjects.

SYNOPSIS OF CIVIL ENGINEERING SUBJECTS.

First Semester—

1. Drawing, 5 times per week. Text: Mahan's Industrial Drawing revised by Thompson. Free-hand Drawing and Sketching, Lettering and Round Writing, Elements of Draughting and Tinting.

Projections—Theory and Plates.

3. Descriptive Geometry. Text: Church's Descriptive Geometry, 5 times per week. Descriptive Geometry, Shades and Shadows, Perspective, Spherical and Isometric Projections.

5. Drawing, 2 times per week. Plates for Course 3.

7. Surveying, 4 times per week. Text: Gillespie's Surveying, Staley. Chain and Compass Surveying, Use of Solar Compass, Farm Surveying, Field Work and Mapping. Available for the students taking the "40 weeks in Surveying."

9. Machine Construction and Drawing, 3 times per week. Text: Warren's Machine Construction. Elements of Machine Construction, Bearings, Journals, Shafting, Pulleys, Belts, Gearing, Odontograph, Screw Propeller, Slide Valves with Connections and Functions, Governors.

11. Applied Mechanics, 5 times per week. Text: Rankine's Applied Mechanics, Burr's Bridges and Burr's Materials of Engineering. Notes. Theory of Structures, Masonry and Earth Dams. Arch, Pier and Abutment. Graphical Statics. Masonry Construction.

13. Hydraulics and Hydraulic Motors, 3 times per week. Text: Merriman's Hydraulics. Theoretical Hydraulics; Flow of Fluids through Orifices, Tubes, Pipes, Conduits, Canals, Weirs, etc. Flow of Rivers; Weir Measurements, Measurement of Water Power. Hydraulic Motors, Overshot, Breast, Undershot and Reaction Wheels, Turbines, etc.

15. Strength of Materials, 3 times per week. Text: Burr's Materials of Engineering and Merriman's Mechanics of Materials. General Theory of Elasticity; Theory of Flexure; Tension, Compression, Long Columns, Shearing and Torsion; Deflections; Working Stresses and Factors of Safety. Fatigue of Metals and Flow of Solids.

17. Steam Engine, 3 times per week. Text: Green's Notes on the Steam Engine. Theory of the Steam Engine. Heat, Combustion, Proportions of Boilers and Chimneys, Properties of Water and Steam, Early Types of the Steam Engine, Jet and Surface Condensation, Work Performed in the Cylinder, Compound Engine, the Indicator, General Dimensions of Engines, Marine Engines, Screw Propeller, Design of a Pumping Plant, Valves and Valve Motions.

19. Inspection of the Common Materials of Engineering, once per week. Text: Notes. Iron, Steel, Wood, Brick, Cement, Lime, Sand, Stone, etc. Specifications.

Second Semester—

2. Drawing, 3 times per week. Continuation of Course 1, also Working Drawings for Machines and Structures.

4. Drawing, 3 times per week. Mapping, Pen and Colored Topography, Detailed Shop Drawings for Bridge Work.

6. Applied Mechanics, 5 times per week. Text: Rankine's Applied Mechanics. Principles of Statics, Kinematics and Dynamics.

8. Higher Surveying and Geodesy, 5 times per week. Text: Johnson's Theory and Practice of Surveying. Theory and Use of Instruments; Transit and Level; Hydrographical Surveying; Topographical Surveying; Geodetic Surveying; Field work and Mapping. Available for the students taking the "40 weeks in Surveying."

10. Stone-cutting, 2 times per week. Text: Warren's Stone-cutting. Arches, Piers, Abutments, Wing-Walls, Oblique and Groined Arches, Winding Stairs, Conoidal Wing-Walls, etc.

12. Stone-cutting, 2 times per week. Plates for Course 10.

14. Railroads, Roads and Canals, 5 times per week. Text: Searle's Field Engineer, Byrne's Highway Construction. Notes.

Railroad Location and Construction. General Theory of Economics. Maintenance of Way. Operation of Railroads. Trunk Lines of the United States. Canal Construction. Roads, Streets and Pavements. Cable and Electric Street Railways.

16. Bridges, Roofs and Framed Structures, 5 times per week. Text: Burr's Bridges, Roofs and Arches. Notes.

Roof Trusses and Mill Construction. Railroad and Highway Bridges—Trusses, Swing Bridges, Arched Ribs, Suspension and Cantilever Bridges. Details of Construction. Modern Shop Practice. Methods of Erection.

18. General Specifications and Contracts, once per week. Text: Haupt's Manual of Engineering Specifications and Contracts. Drawings, Estimates, Specifications, Advertisements, Proposals and Contracts.

20. City and Sanitary Engineering, 2 times per week. Text: Staley and Pierson's Separate System of Sewerage. Notes. Sewers and Sewerage. Water Supplies. Municipal Engineering. City surveying. Pumping Machinery. Pavements.

A special Course in Surveying is offered in addition to the regular four-years' C. E. Course. This is designed especially for those wishing to fit themselves for the position of county Surveyor or government land Surveyor. A certificate of proficiency is given to those that complete this Course, which may be done in 40 weeks.

The fact that we have been able to secure positions (on the surveys and improvements of the Mississippi and Missouri rivers, on the Coast Survey, on railroad surveying and engineering parties, on bridge engineering and on government land surveying parties) for the graduates from this department, has materially assisted in awakening an intelligent interest—a healthy enthusiasm—in the cause of engineering education at this University.

For tuition and other expenses, see "Fees and Expenses."

See also "James S. Rollins University Scholarships," section 6. Examinations for admission will be held the first week of each semester. Certificates from the approved schools will be accepted in place of an examination.

Address for further information,

R. H. Hood,
Professor of Civil Engineering.

2. ELECTRICAL ENGINEERING.

WILLIAM SHRADER, Professor.

On account of the rapidly growing importance of Electrical Engineering, there has been especial attention paid to the equipment of this department. The instruments are mostly of new forms and of the finest make.

Among these may be mentioned Ayrton and Perry's Secohmmeter and Standard of Self Induction; Ayrton and Perry's Ammeters and Voltmeters; Hot-wire Voltmeter; Magnetic Vane Ammeter; Portable D'Arronval Galvanometer; Ballistic Galvanometer; Standard Tangent Galvanometer; Sir Wm. Thomson's Reflecting Astatic Galvanometers; Wiedemann's Dead Beat Galvanometer; Standard resistance boxes and Wheatstone Bridges; Queen's new Portable Testing and Resistance Set; Kohlrausch-Kirchhoff Wheatstone Bridge; Electro-dynamometers; Sir Wm. Thomson's Direct Reading Balances and Graded Potential Galvanometer; Voltameters, Electrometers and Magnetometers.

Among several important appliances are the following: A complete electric light plant consisting of a 60-horse power Corliss engine, a number of dynamos and motors of various sizes and types, series, shunt and compound wound, and in connection with these for use in experiments, Brackett's Cradle Dynamometer with registering apparatus, portable tachometers, speed counters and measuring instruments of most approved forms, a model lighting plant with switch-board and station instruments complete, a large electro-magnet with laminated cores and adjustable pole pieces for the study of resistance and leakage, magnetic induction, etc.

The work in the Electrical Engineering Laboratory consists in the measurement of resistances, electromotive forces and commercial currents by various methods and instruments; the calibration of instruments: especial attention is paid to the study of dynamos and motors, the determination of their electrical and commercial efficiencies, the determination of the candle power of arc and incandescent lights, etc Practice is had in the designing and construction of electrical apparatus and machinery, and in laying out installations.

COURSE IN ELECTRICAL ENGINEERING.

Freshman Year.

Solid Geometry and Algebra	5	Trigonometry and Algebra	5
English	3	English	2
French or German	3	French or German	3
Drawing and Projections	5	Drawing	3
Shop, Wood-work	2	Chemistry	4
		Shop, Wood-work	2

Sophomore Year.

Descriptive Geometry	5	Physics	4
Drawing	2	Drawing	3
Analytic Geometry	3	Analytic Geometry	4
French or German	3	Chemistry	3
English	3	French or German	3
Shop, Iron-work	2	Shop, Iron-work	2

Junior Year.

Calculus, Differential and Integral	6	Mechanics	5
Physics	4	Electricity and Magnetism	3
Shop	5	Thermo-dynamics	2
French or German	3	French or German	3
		Optics and Physical Laboratory	4
		Shop	2

Senior Year.

Applied Mechanics	5	Technical Applications of Electricity	6
Dynamo-Electrical Machinery	4	Dynamo-Electrical Machinery	4
Steam Engine	3	Calibration of Instr. and Elec. Testing.	2
Electrical and Magnetic Measurements.	3	Machine Design	3
Physical Laboratory	2	Specifications and Contracts	1
Chemical Laboratory	2	Thesis	2

For the benefit of students who are unable to pursue their studies long enough to complete the regular course in Electrical Engineering, there is a special course of two years, ending with certificate.

SPECIAL COURSE IN ELECTRICAL ENGINEERING.

Freshman Year.

First Semester.		*Second Semester.*	
Chemistry	4	Chemistry	4
Composition and Rhetoric	2	Composition and Rhetoric	2
Geometry, Trigonometry and Algebra.	5	Geometry, Trigonometry and Algebra.	5
Drawing	2	Drawing	2
Shop	2	Shop	2
Electro-dynamics	4	Physics (from Sophomore)	4

Sophomore Year.

First Semester.		*Second Semester.*	
Physics (Junior)	3	Technical Application of Electricity	3
Drawing	3	Steam Engine	2
Shop	5	Machine Design	2
Physical Laboratory	2	Drawing	2
Electrical Laboratory	2	Shop	3
Arithmetic of Electrical Measurements.	4	Chemical Laboratory (Junior)	3
		Electrical Laboratory	4

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3. MECHANICAL ENGINEERING.

C. W. Marx, Professor.

Freshman Year.

Solid Geometry and Algebra.	5	Trigonometry and Algebra	5
English	3	English	2
French or German	3	French or German	3
Drawing and Projections	5	Drawing	3
Shop, Wood-work	2	Chemistry	4
		Shop, Wood-work	2

Sophomore Year.

Descriptive Geometry	5	Physics	4
Drawing	2	Drawing	3
Analytic Geometry	3	Analytic Geometry	4
French or German	3	Chemistry	3
English	3	Geology	3
Shop, Iron-work	2	Shop, Iron-work	2

Junior Year.

Diff. and Integral Calculus	6	Applied Mechanics	5
Physics	4	Electricity and Magnetism	3
Shop	5	Thermo-dynamics	2
Machine Design and Construction	3	Shop	5
		Mechanical Laboratory	3

Senior Year.

Applied Mechanics	5	Steam Engineering	5
Hydraulics and Hydraulic Motors	3	Mill-work and Machinery	5
Steam Engine	3	Mechanical Laboratory	2
Shop	3	Physical Laboratory	2
Metallurgy	2	Specifications and Contracts	1
Strength of Materials	3	Shop	2

Graduation Thesis.

XX. Department of Military Science.

SAMUEL A. SMOKE, 18th U. S. Infantry,
Professor of Military Science and Tactics, and Commandant of Cadets.

During the year now drawing to a close, 180 cadets have received instruction in this Department. The Cadets are organized in a battalion of four companies, a band and an artillery detachment, as follows:

Battalion Staff and Non-Commissioned Staff.	
Cadet Major	A. J. McCulloch
Cadet First Lieutenant and Adjutant	A. B. Griggs
Cadet First Lieutenant and Quartermaster	E. T. Allen
Cadet Sergeant Major	E. M. Stayton
Cadet Quartermaster Sergeant	J. S. Rogers
Band.	
Instructor	E. F. Pannell
Drum Major	C. Truitt
Company A.	
Cadet Captain	F. W. Niedermeyer
Cadet First Lieutenant	O. W. Granger
Cadet Second Lieutenant	E. W. Robinson
Cadet First Sergeant	Robert Moore
Company B.	
Cadet Captain	F. D. Wickham
Cadet First Lieutenant	K. Stone
Cadet Second Lieutenant	F. S. Balthis
Cadet First Sergeant	C. M. Barnes
Company C.	
Cadet Captain	T. W. Thompson
Cadet First Lieutenant	J. H. Holman
Cadet Second Lieutenant	G. R. Peake
Cadet First Sergeant	R. L. Fulton
Company D.	
Cadet Captain	H. B. Walker
Cadet First Lieutenant	H. T. Botts
Cadet Second Lieutenant	W. T. Jackson
Cadet First Sergeant	F. F. Thompson
Artillery Detachment.	
Cadet Captain	
Cadet First Sergeant	

Those Cadets are appointed to office who show ready obedience, zeal and capacity in the discharge of military duty. The Governor of Missouri issues commissions to those entitled by their battalion rank to receive them.

GENERAL SUPPLIES.

One hundred and fifty Springfield cadet rifles of the latest model, one Gatling gun, cal. 45, with full equipment, two 3-inch rifled field-guns, with carriages and implements, and a suitable amount of ammunition and target materials, are furnished by the United States. The State supplies ammunition, camp equipage, utensils, etc. The University supplies instruments and instruction for the band.

UNIFORMS.

Cadets wear but one style of uniform, known as the undress or fatigue uniform. Uniforms must be worn at all military exercises, and may be worn on all occasions. Tailor-made uniforms are supplied to volunteer cadets at a cost of $16.50 each, including cap and gloves. The State furnishes uniforms to regularly appointed cadets free of cost.

COURSE OF INSTRUCTION.

FIRST YEAR—SECOND CLASS.

Practical instruction in the Schools of the Soldier, Company and Battalion (infantry), and Extended Order.

Practical instruction in rifle firing, 100, 200 and 300 yards.

Practical instruction in duties of camp, embracing guard duty, etc.

Recitations in Infantry Drill Regulations through School of the Company, ceremonies of Guard Mounting, Dress Parade, Inspection, Review, Muster and Extended Order.

Recitations in guard duty, rifle firing and cadet regulations.

SECOND YEAR—FIRST CLASS.

Practical instruction in the Schools of the Company and Battalion, and in Extended Order.

Practical instruction in the service of field-guns (foot battery), with mechanical maneuvers.

Practical instruction in rifle-firing, 100, 200 and 300 yards.

Practical instruction in the duties of camp, embracing guard duty, etc.

Practical instruction in military signaling.

Recitations in Infantry Drill Regulations, School of the Battalion.

Recitations in Artillery Tactics, manual of the piece dismounted.

Recitations in the elements of Field Fortifications.

Recitations in the elements of the Art of War.

Lectures on Army Organization, the Army of the U. S., the Regulations of the U.S. Army, the Regulations of the National Guard of Missouri, Courts-Martial and Military Law and the Customs of War, Street Fighting, etc.

CERTIFICATE OF PROFICIENCY.

To have passed through the entire course does not entitle a cadet to receive a certificate of proficiency in military science and tactics, but it is the rule now adopted in the department that the certificate will be issued to every cadet, State or volunteer, who takes the entire course and attains the second grade (at least 70 per cent) in *every examination* during the two years.

APPOINTMENT OF STATE CADETS.

The following extracts from the Militia law of the State of Missouri, enacted by the Thirty-fifth General Assembly, and now in force, will be of interest to those who desire to receive the appointment as cadet:

SEC. 5. The Military department of the University of the State of Missouri, as organized under section 1225, Revised Statutes of the United States, and section 7279, Revised Statutes of Missouri, 1879, is created the Missouri State Military School.

SEC 6 The corps of cadets at the Missouri State Military School shall consist of one from each senatorial and representative district in this State, and shall be actual residents in the district from which appointed, and shall pass the required examination for admission to the University. Each Senator and Representative of the General Assembly of the State of Missouri shall appoint during the month of August in each year a cadet for such scholastic year.

SEC. 7. Cadets receiving instruction as provided in the preceding section shall be matriculated in all the academic departments of the University free from tuition fees, and subject only to the incidental fees and laboratory fees therein provided.

SEC. 8. The corps of cadets as provided in the preceding sections shall have the military organization prescribed for the National Guard of the State and reckoned a part thereof, and as such entitled to all such provisions as are or may hereafter be made for the National Guard of Missouri. The military government and discipline of the cadets shall be prescribed by regulations prepared by the Faculty of the University and approved by the Governor of the State

No cadet will be received who is under 16 or over 25 years of age, or who is less than five feet one inch in height, or who is in any way physically disqualified for military service.

All male students of the University not physically disqualified, and who come within the limits of age and height, will be allowed to enroll themselves as voluntary cadets, but State cadets only will be matriculated in Academic departments of the University free of tuition, and provided with uniforms without expense to themselves. A copy of the regulations for the government of cadets will be given to each cadet upon his entrance into the Missouri State Military School These regulations require cadets to enter and report to the commandant for duty *before* September 25th of each year. They should report by September 12th, if possible.

Cadet regulations prescribe that military drills, etc., shall be held at least three hours each week, one of which shall be for theoretical and two for practical instruction. The regulations also require an annual encampment of from eight to ten days, during which time the instruction is entirely military and practical. Here the cadets are put through all the duties of camp life. They conduct their own commissary and quartermaster departments. They have target practice at 100, 200, 300 and 400 yards, and perform the duties of sentinels, patrols, etc., and are given all the drills and ceremonies prescribed in the two years' course. The expenses of the camp are borne by the University.

SAMUEL A. SMOKE,
2d Lieutenant 18th Infantry U. S. Army,
Professor of Military Science and Tactics.

XXI. Department of Art.

———————, Professor.

XXII. Department of Elocution.

———————, Professor.

UNIVERSITY EXTENSION.

Upon the invitation of the Kansas City Society for University Extension, the following courses were offered during the current year:

Electricity and its applications, Professor Shrader; Semitic Languages, Professor Blackwell; History of the English Language, Professor Allen; History of Education, Professor Blanton; History of Mathematics, Professor Smith; Greek Life, Professor Manly; Roman Antiquities, Professor Jones; Botany, Professor Purinton; Sidereal Astronomy, Professor Updegraff; Heat, Professor Lipscomb; Industrial History and Economics, Professor Hicks; Greek Art and Theatre, Professor Pickard; American Literature, Professor Wauchope.

The courses in Electricity and English were called for, and twelve lectures on each course were given to large classes by Professors Shrader and Allen.

TEACHERS' COURSE.

Special courses of instruction are offered by professors of the University to the teachers of the State, from April 1 to June 1, free of all charges. It is thought that many teachers, especially those whose school-term expires about the 1st of April, will avail themselves of this most practical form of University Extension. The instruction of specialists, dealing with the difficult points of each subject, presenting new methods and outlining work to be pursued by the teacher, together with the free use of the library and laboratories, cannot fail to be helpful and stimulating to those engaged in school work.

A pamphlet containing full information in regard to courses, expenses, etc., may be had by addressing Professor J. P. Blanton.

FARMERS' INSTITUTE.

As a legitimate department of the University extension work, the Faculty of the College of Agriculture and Mechanic Arts have, during the past year, taken an active part in the series of Farmers' Institutes, amounting to fifty, which have been held during the year under the auspices of the State Board of Agriculture in various portions of the State, and it is the policy of the University to continue this work, as far as it can be done without interfering with the regular duties of the various departments.

UNIVERSITY LIBRARY.

During the year 6636 volumes have been purchased for the Library. Of the $13,000 expended for books, $10,000 came from the insurance on the old Library. A Special committee of the Faculty made the selection of new books, which include, besides standard works, many of the latest and best works in the various departments of learning. The total number of bound volumes bought and given since the destruction of the Library by fire, in January 1892, is 11,588.

DONATIONS TO UNIVERSITY LIBRARY.

Donors.	Vols.	Donors.	Vols.
United States Government	740	Arkansas Geological Department	6
" "	295	American Swedenborg Society	4
" "	154	St. Louis Academy of Science	6
" "	73	Anonymous	3
Missouri State Agricultural Society	69	American Humane Society	2
Michigan State University	57	Italian Oriental Society	1
Minnesota Agricultural Society	14	Agricultural Department of Georgia	1
Stock Associations	14	Professor G. C. Broadhead	1
Missouri State Government	56	T. J. J. See	1
*Boston Public Library	399	Miss Katharine Iglehart	1
*F. A. Brockhaus	161	J. P. Hubbell	1

*Special mention is made of the Boston Public Library and of Mr. F. A. Brockhaus, of Leipsic, Germany, for generous gifts.

PERIODICALS PURCHASED FOR CURRENT YEAR.

Academy (Boston)
Academy (London)
Agricultural Gazette
Agricultural Science Monthly
Albany Law Journal
American Antiquarian
American Naturalist
American Journal of Science
American Journal of Mathematics
American Journal of Philology
American Microscopical Journal
American Journal of Medical Sciences
American Law Review
American Geologist
American Garden
Andover Review
Annals of Mathematics
Archives of Ophthalmology
Archives of Othology
Arena
Atlantic Monthly
Braithwaite's Retrospect
British Medical Journal
Century Magazine
Chautauquan
Chemical News (London)
Christian Union
Classical Review
Critic
Eclectic Magazine
Edinburgh Review
Education
Educational Review
Electrical Engineer
Electrical World
Engineering and Mining Journal
Engineering News
Forum
Gardener's Chronicle
Globe-Democrat (daily)
Gynecology, Obstetrics and Pedology
Harper's Magazine
Harper's Weekly
Hebraica
Hermes Zeitschrift
Independent (New York)
Johns Hopkins Hospital Reports
Journal of Economics
Journal of Education
Journal of American Medical Association
Journal of Nervous and Mental Diseases
Journal of Anatomy and Physiology
Journal of Cutaneous and Genito-Urinary Diseases
Journal of Physiology
Journal of Comparative Medical and Veterinary Archives
Journal of Hellenic Studies
Journal of Royal Microscopical Society (London)
Journal of Society of Natural History
Journal of Chemical Society (London)
Kansas City Journal (daily)
Kansas City Star (daily)
Kansas City Times (daily)
Ladies' Home Journal
Leslie's Illustrated Weekly
Lippincott's Magazine
London Lancet
London Quarterly
Magazine of American History
Medical Journal (New York)
Medical News
Modern Language Notes
Nation
New England Magazine
Nineteenth Century
North American Review
Poet Lore
Political Science Quarterly
Popular Science Monthly
Public Opinion
Quarterly Review (London)
Review of Reviews
Revue des Deux Mondes
Rhenisches Museum fur Philologie
Sanitarian
Scientific American
Scientific American Supplement
Scribner's Magazine
Shakspeariana
St. Louis Republic (daily)
Sunday School Times
Truebner's Oriental Record
University Magazine
University Extension Magazine
United Service
Youth's Companion

PERIODICALS PRESENTED TO THE LIBRARY.

American Economist
Apostolic Guide
Centralia Courier
Central Baptist
Colman's Rural World
Columbia Herald
Columbia Statesman
Cooper County Democrat
Cynosure
Hannibal Daily Jonrnal
Kansas City Live-stock Indicator
Knox County Democrat
Medical Mirror
Merck's Medical Bulletin.
Mexico Intelligencer
Mexico Ledger
Mid-Continent
Monroe City News
National Economist
Nashville Christian Advocate
Post-Dispatch (daily).
Richmond Christian Advocate
Saline County Progress
San Jose Herald
Shelbina Democrat
St Joseph Herald
St. Joseph Gazette
St Louis Christian Advocate.
Weekly Democrat-News

The reading room is open during the school-year, excepting Sundays and legal holidays, from 9 a. m. to 1 p. m., and from 2 p. m. to 5 p. m.

J W. Monser,
Librarian.

MISCELLANEOUS.

YOUNG WOMEN.

All departments of the University are open to women. There are special waiting-rooms furnished with all the proper equipment for health and comfort, and presided over by the Matron, Mrs Kate Hendricks, who has charge of all the young ladies in attendance. In the lecture-rooms, they receive the same instruction and meet the same intellectual requirements as the young men. During lecture hours—that is, from 9 a. m. to 4 p. m —the young ladies are expected to be in their waiting-rooms, or in the University Library, or at their respective homes.

The Matron does no teaching, but gives her entire time to her duties in the Ladies' waiting-rooms. She is the confidential friend and adviser of the young ladies under her charge, and it is especially her duty to exercise watchful care over their health, manners and general conduct.

The University has no boarding department; but most of the families of Columbia take boarders, and students find no trouble in securing, at reasonable rates, the comforts and refinements of home life. For young women, especially, we consider this peculiarly fortunate.

There are six churches of different denominations in Columbia. For information about the Young Women's Christian Association and the Philalethean and Thalian Literary Societies, all of which are composed of students of the University, see pages 81 and .

DIRECTIONS FOR NEW STUDENTS.

1. New students will first present themselves to the President, who will issue to them a card of admission to the examinations. This should be done *before paying tuition fees* Examinations for admission will be given by the English and Mathematical and Agricultural departments on Thursday, Friday, Saturday and Monday (September 7th, 8th, 9th and 11th) preceding the opening of the University. If assistance is needed in obtaining board, application should be made to the Proctor.

2. After passing the entrance examinations, the student must pay to the Treasurer the amount required. See pages 79-80.

3. The Treasurer's receipt should be at once presented to the Proctor, when the name of the student will be entered upon the University roll.

4. The card received from the Proctor must be presented to the Secretary of the University, who will enroll the student's name and give to him his class-card, with instructions how to have it filled.

5. Class-cards must be properly filled, countersigned and deposited with the Secretary of the University within three days after they have been issued. In the Academic department, cards are countersigned by the President; in any professional department, by the Dean first and then by the President.

DISCIPLINE.

The rules for the government of students are published in pamphlet form, and may be had on application to the Librarian. Every student is expected to procure a copy immediately upon entrance.

CHAPEL EXERCISES.

Religious exercises are held every morning from 8:45 to 9 o'clock in the chapel. They consist of readings from the Old and the New Testaments, a brief prayer, and a song by the choir Prompt attendance and orderly conduct are required of every student in the University.

STUDIES.

Academic students are expected to have not less than fifteen nor more than twenty hours per week at lectures or recitations, and the number may not exceed eighteen without special permission of the Faculty. One hour in the lecture-room is considered equal to two in the laboratory, drawing-room or shop. Class-cards, when once filed with the Secretary, can be changed only by Faculty action.

EXAMINATIONS AND CLASS HONORS.

1. Examinations at the end of each semester close the studies pursued to that point. Re-examinations for substitution of grades are not allowed after the lapse of one scholastic year.

2. The honor of appearing as valedictorian at Commencement is awarded to that student who has the highest grade.

3. All special examinations are in the discretion of the heads of departments.

DEGREES.

The following degrees are now conferred by the University:

In the Academic department, A. B. (Bachelor of Arts), L. B. (Bachelor of Letters), and S. B. (Bachelor of Science).

In the Law department, LL. B. (Bachelor of Laws), and LL. M. (Master of Laws).

In the Engineering department, C. E. (Civil Engineer), E. E. (Electrical Engineer), M. E. (Mining Engineer), and Mech. E. (Mechanical Engineer).

In the Agricultural College, B. Agr. (Bachelor of Agriculture), M. Agr. (Master of Agriculture).

In the Normal department, Pe. B. (Bachelor of Pedagogics).

In the Medical department, M. D. (Doctor of Medicine).

In addition to the above, the usual Master's degrees and the degree of Ph. D. are conferred upon the completion of sufficient graduate work.

Except that of LL. D., no degree is conferred in course or *honoris causa*.

REQUIREMENTS FOR THE MASTER'S DEGREES.

The Master's Degree is not given in course nor *honoris causa*, but may be attained by at least one year's graduate study of advanced character, at least half of which must be in some one department of the University, and the whole of which must be approved both in kind and in amount by the heads of the departments concerned. The applicant for the degree must be recommended by the University Faculty to the Curators after favorable report by the Committee on Degrees.

REQUIREMENTS FOR THE DOCTOR'S DEGREES.

The requirements for the degree of Doctor of Philosophy or of Science are:

1. That the candidate shall have received a Bachelor's degree (in Arts, Letters, Science, or Philosophy) from some reputable University or College.

2. That he shall have attained, in a current graduate study pursued at this University, a high proficiency in some one branch of learning and respectable proficiency in at least one other.

3. That he shall have submitted a dissertation evincing capacity for original research and power of independent thought.

The attainment of the doctorate is not a mere matter of fidelity nor of diligence, nor of duration of effort. No definite course can be prescribed and no period of time specified, but in general the candidate will be expected to spend three years, or if he have a Master's degree, two years, in graduate study under University direction, but with Faculty approval one of these years may in either case be spent *in absentia*.

CERTIFICATES.

A certificate in surveying is granted by the Engineering department, and also one in practical Electrical work; one in Pedagogics is given by the Normal department, and one in the two-years' course in Agriculture; also one in the Military department.

PRIZES.

Stephens Medal—Founded by the Hon. James L. Stephens, a retired merchant of Columbia, and annually awarded for the best oration by a member of the Senior class.

The prize consists of a book in defense of the Christian religion, and a gold medal, for the purchase of which the annual interest on $500 is available.

Junior Medal—This prize, offered by the literary societies for the best oration, is open to all students of the University below the Senior year.

Declamation Medal—This prize is offered by the literary societies to the best declaimer.

The Laws Astronomical Medal—For conditions of award, see Mathematical department.

Dachsel Prize—$10 in money, by Charles Dachsel, engineer, Jefferson City, Mo., is awarded for best thesis on steam engine.

McAnally Medal—For best English essay. (See English department, page 9)

Latin Prize—See Latin department.

Rollins Scholarships—See page 80.

For High School Scholarship, see page 35.

FEES AND EXPENSES.

Academic students pay an entrance fee of $10 and a library and incidental fee of $10; but if the student enters at the opening of the second semester, the library and incidental fee is reduced to $5, making the sum of the fees $15.

The Law student (regular or special) pays $50 a year. Students who enter the Law department after January 1 pay $35 for the remainder of the session. Graduates of the Law department may continue their studies a third year, or longer, for an annual fee of $10.

The Medical student pays $20 for the first year; for the second year, $50; for the third year, $50: this includes the demonstrators' ticket.

The Engineering student pays $20 for the Freshman year and for the Sophomore year; for the Junior and Senior years he pays $50 each. State cadets in the Academic department pay $10 the first semester. If they enter at the opening of the second semester, they pay $5; in all the other departments of the University they pay the regular fees.

Agricultural students pay $10 in lieu of all other charges.

Graduate students, in any department, pay an entrance fee of $10 and the usual laboratory fees.

A uniform fee of $4 is charged in all laboratories (Physics, Chemistry, Biology, Geology) and a conditional fee of $5 more is charged in the Chemical laboratory, to cover breakage, abuse, etc.

All fees must be paid upon entrance.

The fee for diplomas is $2. Payment must be made to the Treasurer of the University and his receipt handed to the Secretary of the Faculty before the name of the applicant is recommended to the Curators for the degree.

GRADUATE STUDENTS.

All graduates of regularly chartered Colleges and Universities of the State of Missouri, authorized to confer the degrees of A. B., A. M., S. B., LL B, M. D., C. E., Pe. B., and similar degrees, may be admitted to the University as graduate students in their special line of graduation upon payment of the contingent and laboratory fees. See pages 79-80

MINISTERS AND STUDENTS PREPARING FOR THE MINISTRY.

All regularly ordained ministers of the Gospel belonging to any of the religious denominations of this State in good standing may, without payment of fees, attend any of the departments of the University, except those of Law, Medicine and Engineering. The same privilege is extended to any young man in the State preparing for the ministry who shall submit to the President and Faculty of the University satisfactory testimonials, that he is in good faith a candidate for the ministry, and that without aid he is unable to meet the expenses of education at the University.

THE JAMES S. ROLLINS UNIVERSITY SCHOLARSHIPS.

In 1889, the Hon. James S. Rollins left six thousand dollars ($6,000) to endow six scholarships in the University—"the interest" on this $6,000 "to be forever used and appropriated under the authority and by the direction of the Board of Curators of the University of the State of Missouri for the following purposes, that is:

"To found scholarships to be awarded by the President and Faculty of the University—the vote in each case to be by ballot—as a reward for excellence and promise in—

"*First*—The College of Arts, for the degree of A. B., fifty dollars.

"*Second*—The College of Arts, for the degree of S. B., fifty dollars.

"*Third*—The College of Agriculture and Mechanic Arts, for the degree of B. Agr., fifty dollars.

"*Fourth*—The College of Law, for the degree of LL. B., fifty dollars.

"*Fifth*—The College of Medicine, for the degree of M. D., fifty dollars.

"*Sixth*—The College of Engineering, for the degree of C. E., fifty dollars.

"These scholarships are intended as a recognition of merit and character in the beneficiaries, and shall be payable on the first day of June of each year to that member of the *Junior class*, in each of the colleges designated, who shall be adjudged entitled to it by the President and Faculty; and the names of the persons receiving said scholarships shall be publicly announced on Commencement day by the President of the University.

"In according these scholarships, it is earnestly impressed upon the President and Faculty of the University, that in the mind of the donor, purely intellectual and literary

ability are not alone to be considered, but that the moral character of the contestants should be regarded as a factor of no small weight in coming to a decision.

"With the earnest hope that by the means here provided, worthy young men and women may in all coming time be helped and encouraged in their struggle toward a higher life and greater usefulness, this fund is committed to the honor and good faith of the State, whom the Board represents, and by whose authority the donation is made and accepted. I am very respectfully,

(Signed) JAMES S. ROLLINS."

ROLLINS AID FUND.

Anthony W. Rollins, M. D., an honored citizen of Boone county, father of the Hon. James S. Rollins, on dying in 1845, left by his will the sum of $10,000 in trust for the purpose of educating such poor and indigent youths of Boone county, both male and female, as might be unable to educate themselves. Three-fourths of the annual interest on the fund, according to the directions of the donor, is to be devoted to the education of the youths of Boone county, and the remaining fourth is to be added to the interest-bearing principal. The fund amounts now to about $40,000. The beneficiaries of this charity are annually selected by the President of the University from the indigent youths of Boone county, male and female. In compliance with the wishes of the donor, the selection is made with reference to the moral as well as intellectual qualities of the youths inclined to avail themselves of the advantages of the fund, preference being given, in the selection of boys, to such as evince an inclination to preach the gospel.

Applications for aid from the Rollins fund must hereafter be in writing; a blank form will be furnished by the Proctor, with whom it must be filed after it has been filled The applicant must appear in person at the opening of the first semester, September 12, as no reservation will be made.

BOARDING.

Board in private families, with lodging, washing, fuel and lights, may be obtained for from $3 to $4.50 a week.

The club-houses afford accommodations for 122 students. The room-rent for each student is $10, payable on or before the first day of September. The cost of board, room-rent, fuel, lights and washing, to those who enter a club, is about $1.75 a week. Each room is furnished with a double bedstead, a stove, a table and two chairs. The occupants are expected to furnish whatever else they deem necessary.

The members of a club have their own officers—president, commissary, secretary, censors, etc. They levy and collect assessments, buy their own provisions, and thus regulate their own expenses.

Students in the College of Agriculture and Mechanic Arts will have the preference of rooms in the two Agricultural club-houses, provided application be made before the opening of the first semester, in September; but they will pay the same rent as other students. These two buildings accommodate 32 men.

As the accommodations of the club-houses are limited, it is necessary for students who wish to engage rooms to make early application for them, as they are frequently all engaged before the opening of the college year The rooms are assigned in the order of application, and requests for them must be made to the Proctor of the University.

LITERARY SOCIETIES.

There are three Literary Societies of young men and two of young women connected with the University, viz.: The "Athenæan," the "Union Literary," the "Bliss Lyceum," the "Philalethean" and the "Thalian." These societies hold weekly meetings for improvement in debate, declamation, oratory and composition, are in a flour-

ishing condition, and form a most important means of culture, especially in speaking and writing.

An address is delivered before them, during Commencement week, and society diplomas are given to such members as belong to the graduating class.

THE ARGUS, a fortnightly perio lical, is the organ of the Literary Societies.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The object of this organization, which dates its existence in the University of Missouri from January 18, 1890, is quite the same as in other such institutions of learning, namely: to represent and in every proper way to promote practical Christianity, particularly among the students. The work has been rich in good results, and it has all along enlisted the sympathy and co-operation of the Faculty and the authorities of the University.

Devotional exercises are held Sunday afternoon in the hall of the Association, with an average attendance of nearly 100. Classes hold weekly meetings for the study of the Bible, and special religious services are held from time to time.

A movement of great importance has been set on foot: to erect a building to cost at least $40,000, for the Young Men's and Women's Christian Associations. For this purpose, the former has already pledged the sum of $6500, and any encouragement from sympathetic friends will be gratefully acknowledged. It is intended that the building shall be complete in its appointments, containing commodious rooms for reading, lectures, Bible classes, University class organizations, meetings of the Alumni and of the Christian associations, as well as bath-rooms and a gymnasium—in short, an edifice in which the whole State may feel pride and interest.

A lot immediately in front of the University campus has been purchased for the site of this building, at a cost of $2650, of which about $1000 has already been raised by the students.

At the beginning of each scholastic year, a committee from the Y. M. C. A., to be recognized by their badges, will meet students at the trains and freely render them often valuable assistance in securing them boarding by introducing them to friends and to officers of the University, and by various other acts of kindness. A letter sent in advance to the President of the Young Men's Christian Association will receive prompt and cheerful attention.

The Association also offers annually to the public, particularly to the students, at actual cost, a series of literary and musical entertainments of high order and excellence.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION.

This Association is similar in its aims and methods to the foregoing. It was organized April 2, 1891, and its membership has grown from 32 to 50. Its object is the prosecution of Christian work and the development of Christian character, particularly among the young women of the University. Its weekly meetings are held at 4 p. m. every Sunday, one of them every month being a union meeting in conjunction with the Y. M. C. A.

Equally with the Young Men's Christian Association, the Young Women's shares the hearty and unanimous sanction and encouragement of the Faculty and authorities of the University.

ALUMNI.

The Alumni Association is composed of graduates of the University. It holds an annual meeting on Wednesday and Thursday of Commencement week, and is addressed in the University chapel by an orator previously selected from its own body.

The objects of this society are the promotion of education, especially in the halls of the Alma Mater, the reunion of early friends and co-laborers in literary pursuits, and the revival of those pleasing associations which entwine themselves about academic life.

The fee for membership is $2. This is added to the permanent fund, only the interest of which is used. It is hoped that all graduates of the University, whether academic or

professional, will become members of the Association. The University Librarian solicits aid in securing facts for the next triennial, and will be thankful for published notices of officers and graduates, and for books, pamphlets and articles published by them.

The officers of the Association are: President, Hon. Gardiner Lathrop, Kansas City; First Vice-President, Hon. D. W. B. Kurtz, Columbia; Second Vice-President, Dr. H. W. Loeb, St. Louis; Secretary, C. B. Sebastian, Columbia; Treasurer, N. T. Gentry, Columbia; Orator '93, Mrs. Sallie Gentry Elston, Kansas City; alternate, F. N. Peters, Carrollton, Mo.

A subscription fund of $3000 has been raised and placed at interest, which is used in defraying the expenses of the annual meeting at Commencement—a very enjoyable and also a very profitable occasion. The Alumni constitute in fact one of the largest elements in the life of the University, and, efficiently organized, may become the most powerful agent in her development and prosperity. No effort should be omitted, both to strengthen the central organization at Columbia and to extend its branches throughout the State.

Officers of the Local Chapters of the Alumni Association.

Chillicothe:
T. F. Spencer, President.
Scott L. Miller, Secretary.

Clarksville:
Dr. C. W. Pharr, President.
Arnold Manns, Secretary.

Cambridge, Mass.:
W. W. Clendenin, President.
C. M. Hibbard, Secretary.

Denver, Colorado:
T. M. Field, President.
J. T. Bottom, Secretary.

Fort Smith, Arkansas:
F. A. Youmans, President.
M. D. Hunton, Secretary.

Huntsville:
Dr. John T. Fort, President.
Wm. Palmer, Secretary.

Jefferson City:
Henry W. Ewing, President.
Frank M. Brown, Secretary.

Kansas City:
J. V. C. Karnes, President.
Shannon C. Douglass, Secretary.

Macon City:
R. W. Barrow, President.
John F. Williams, Secretary.

Moberly:
Judge B. S. Head, President.
F. G. Ferris, Secretary.

Richmond:
Thomas N. Lavelock, President.
F. P. Divelbiss, Secretary.

Salisbury:
Miss Leila Britt, President.
L. W. Martin, Secretary.

Santa Fe, New Mexico:
————, President.
N. B. Laughlin, Secretary.

Sedalia:
Charles E. Yeater, President.
Louis Hoffman, Secretary.

Silver City, New Mexico:
G. W. Miles, President.
R. H. Theilman, Secretary.

Springfield:
Hon. J. C. Cravens, President.
J. P. Bates, Secretary.

Slater:
Ulie Denny, President.
Gay Hancock, Secretary.

St. Joseph:
Judge H. S. Kelley, President.
W. H. Utz, Secretary.

St. Louis:
Judge Warwick Hough, President.
R. H. Phillips, Secretary.

XXIII. School of Mines and Metallurgy.

Executive Committee.

GEN. E. Y. MITCHELL.....Rolla
JOHN S. LIVESAY, Esq.....Rolla
HON. CHARLES C. BLAND.....Rolla

Officers of the Committee.

EWING Y. MITCHELL.....Chairman
DAVID W. MALCOLM.....Treasurer
W. M. SMITH.....Secretary

FACULTY.

RICHARD HENRY JESSE, LL. D.,
President of the University.

ELMO G. HARRIS, C. E.,
**Director and Professor of Engineering.*

WALTER BUCK RICHARDS, M. A.,
Professor of Mathematics.

AUSTIN LEE McRAE, Sc. D.,
Professor of Physics.

WILLIAM H. SEAMON, B. A. S.,
Professor of Chemistry and Metallurgy.

————————,
Professor of Mines and Metallurgy (to be appointed soon).

THOMAS LEWIS RUBEY, A. M.,
Secretary, and Instructor in Academic Department.

PAUL J. WILKINS, B. S.,
Instructor in Academic Department.

THOMAS GRAYSON POATS,
Instructor in Drawing and Shop-work.

DANIEL C. JACKLING, B. S.,
Assistant in Chemistry and Metallurgy.

CLIFTON B. SPENCER,
Assistant in Engineering and Mathematics.

*Professor Harris has resigned his position as Director, to take effect July 1, 1893. He will be succeeded as Director by Professor Richards.

INTRODUCTORY STATEMENT.

The School of Mines and Metallurgy was founded in 1870, under the act of Congress, approved July 2, 1862, entitled "An act donating lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," as a department of the College of Agriculture and Mechanic Arts in the University of the State of Missouri.

It is located at Rolla, a city of 2000 inhabitants, on the St. Louis & San Francisco railroad, about midway between St. Louis and Springfield, 1100 feet above sea-level, in a pre-eminently salubrious region.

The course of instruction deals in detail with the principles and the practice of Engineering, with special reference to Mining Engineering, Civil Engineering, Chemistry and Metallurgy, Mathematics, Physics and Electricity, and includes recitations, lectures, laboratory work and field practice. While a theoretical knowledge of each subject is required, great importance is attached to laboratory work and field practice as a source of mental training as well as a preparation for active pursuits. In the first of these, while a certain standard of excellence must be attained by all, the class system is not adopted, but each student, working independently of others, advances as rapidly as possible.

At the close of the year each member of the Senior class presents to the Faculty some independent investigation in a subject included in his course. These theses, together with all drawings to illustrate them, are preserved in the library of the school.

Provisions are now made for the following technical courses:

I. Mining Engineering.
II. Civil Engineering.
III. Mechanical Engineering.
IV. Chemistry and Metallurgy.
V. Mathematics and Physics.

Each leading to the degree of Bachelor of Science.

The requisites for admission to any of these courses are passing grades in the subjects taught in the preparatory course. All the Engineering courses are the same through the Junior year; beyond it they diverge as outlined below.

Besides these regular courses, there are the following special ones:

I. Assaying.
II. Surveying.
III. Electricity.

On the satisfactory completion of any one of these a certificate of proficiency will be given. The requisite for admission to any one of these courses is an adequate knowledge of the preparatory subjects.

SCHEME OF STUDIES.

[The numbers in parenthesis refer to the exercises per week.]

ENGINEERING COURSES.

JUNIOR YEAR.

First Semester.—General Chemistry (3), Elementary Mechanics (2), Descriptive Geometry (2), Surveying (1), Trigonometry (5), Chemical Laboratory (3), Field-Work (2), Drawing (1).

Second Semester.—General Chemistry (3), Elementary Mechanics (2), Stereotomy (1), Geodesy (2), Analytic Geometry (5), Chemical Laboratory (3), Field-Work (2), Drawing (1).

MINING ENGINEERING.

INTERMEDIATE YEAR.

First Semester.—Analytic Geometry and Calculus (3), Physics (3), Ore Concentration (2), Mineralogy (3), Engineering (3), Field-Work (2), Physical Laboratory (2), Chemical Laboratory (3).

Second Semester.—Physics (3), Fuels, Furnaces, etc. (2), Geology (3), Engineering (2), Chemical Laboratory (3), Physical Laboratory (2).

SENIOR YEAR.

First Semester.—Analytic Mechanics (3), Metallurgy (2), Dynamo-Electric Machinery (2), Mining Engineering (5), Physical Laboratory (2), Chemical Laboratory (3).

Second Semester.—Metallurgy (2), Electric Transmission of Energy (2), Mining Engineering (5), Physical Laboratory (2), Chemical Laboratory (3). Thesis.

CIVIL ENGINEERING.

INTERMEDIATE YEAR.

First Semester.—Same as in Mining Engineering.

Second Semester.—Calculus (3), Physics (3), Geology (3), Civil Engineering (3), Field-Work (2), Physical Laboratory (2).

SENIOR YEAR.

First Semester.—Analytic Mechanics (3), Dynamo-Electric Machinery (2), Civil Engineering (5), Field-Work (2), Physical Laboratory (2), Drawing (2), Practical Photography (1).

Second Semester.—Astronomy (1), Electric Transmission of Energy (2), Civil Engineering (5), Field-Work (2), Physical Laboratory (2), Drawing (2). Thesis.

MECHANICAL ENGINEERING.

INTERMEDIATE YEAR.

First Semester.—Same as Mining Engineering, except Shop Practice instead of Field-work.

Second Semester.—Same as Civil Engineering, except Shop Practice for Field-work, and Mechanical for Civil Engineering.

SENIOR YEAR.

First Semester.—Analytic Mechanics (3), Dynamo-Electric Machinery (2), Mechanical Engineering (5), Shop Practice (2), Physical Laboratory (2), Machine Design and Drawing (3).

Second Semester.—Electric Transmission of Energy (2), Mechanical Engineering (5), Physical Laboratory (2), Shop Practice (2), Machine Design and Drawing (3).

CHEMISTRY.

JUNIOR YEAR.

First Semester.—General Chemistry (3), Elementary Mechanics (2), German (5), Trigonometry (5), Chemical Laboratory (3).

Second Semester.—General Chemistry (3), Elementary Mechanics (2), German (5), Analytic Geometry (5), Chemical Laboratory (3).

INTERMEDIATE YEAR.

First Semester.—German (5), Ore Concentration (3), Mineralogy (3), Chemical Laboratory (25).

Second Semester.—Same as first semester, except Geology in lieu of Mineralogy.

SENIOR YEAR.

Both Semesters.—Metallurgy (2), Chemical Laboratory (30).

Department of Engineering.

ELMO G. HARRIS, Professor. T. G. POATS, Assistant.

In this department constant effort is made to give the student a working knowledge of his subject. He is taught to obtain practical results in the most direct and economical way, and is daily exercised in such problems as will come up in practice. In field practice the Juniors enter the corps as rodmen, the Intermediates as instrument-men, while the Seniors are placed in charge, under direction of the instructor.

The department is equipped with field instruments of the best make, sufficient for two full corps at once.

MINING ENGINEERING.

JUNIOR.

First Semester.—Descriptive Geometry: Parallel and central projections as applied in draughting, with constant exercises in determining orthogonal and oblique projections of familiar objects.

Field-work.

Second Semester.—Stereotomy: Descriptive Geometry as applied to the art of stone-cutting.

Field-work.

First Semester.—Field Instruments: The field instruments of the engineer dissected and studied in detail as to theory, construction, adjustment, uses and capabilities.

Second Semester.—Engineering Geodesy: General and particular methods of traversing, triangulating, direct and indirect leveling; land, city, topographical and hydrographical surveying; United States system of subdivision of land.

Field-work. Drawing.

INTERMEDIATE.

First Semester.—Mine Surveys.

Exploitation of Mines: Theory of deposits in beds, lodes and pockets; prospecting, exploration and development by shafts, inclines and tunnels; underground transportation, drainage, ventilation, lighting.

Second Semester.—Tunneling, Masonry, Quarrying: Strengths of stone and brick, cements, mortars; foundation, stability of masonry structures; engineering materials, drawing.

SENIOR.

First Semester.—Hydraulic: Collection and measurement of water, conveyance through pipes and canals; designs of dams and pipe-lines.

Prime Movers: Hydraulic motors, steam engines and boilers, horse-power appliances.

Graphical Statics.

Second Semester.—Transmission of power: Cable, compressed air, electricity.

Mining Machinery: Pumps, ventilators, hoists, drills.

Mechanical Concentration of Ores.

Drawing. Thesis.

CIVIL ENGINEERING.

Junior year and second semester of the Intermediate same as under Mining Engineering, with the addition of field work.

INTERMEDIATE.

First Semester.—Railroad Engineering: Surveys, construction and maintenance.

Highway Engineering: Surveys, construction and maintenance; street paving.

Field-work. Drawing.

SENIOR.

First Semester.—Same as under Mining Engineering.

Second Semester.—Bridge Engineering: Determination of loads, strains and dimensions for bridges, roofs and other framed structures.

Sanitary Engineering: Water supply of cities and towns, sewerage, irrigation.

Field-work. Drawing. Thesis.

MECHANICAL ENGINEERING.

JUNIOR.

Identical with Junior Mining Engineering, with shop practice substituted for field-work.

INTERMEDIATE.

First Semester.—Same as first semester in Intermediate Mining Engineering.

Second Semester.—Kinematics. Drawing. Shop Practice.

SENIOR.

First Semester.—Same as first semester in Senior Mining Engineering.

Second Semester.—Transmission of power: Cable, compressed air, electricity.

Mechanics of Machines.

Drawing. Thesis.

DRAWING.

FIRST YEAR.

Most of the first year's work in the Engineering department is at the drawing-board. Here belongs naturally all work in Descriptive Geometry and in Stereotomy. The use of drawing instruments—simple problems in points, lines and planes—graphical solution of the more complicated problems—shading of projections, in pencil, by free-hand pen-work, with the ruling-pen, in water-colors and India ink.

SECOND YEAR.

Work assigned according to the profession chosen by the student. The students in Civil and in Mining Engineering will select some complete engineering structure and present it in simple plan and elevation—one in axonometric, another in perspective—all neatly shaded, tinted and lettered. All field surveys must be platted neatly, and one topographical drawing made from notes taken in the field by the student will be required of each. The student in Mechanical Engineering will be continuously exercised in mechanical and machine drawing.

THIRD YEAR.

Seniors have a variety of exercises in Graphical Statics, and are required to present working drawings of many structures, such as bridges, arches, dams, etc. The thesis must be accompanied by drawings fully illustrating it.

Department of Chemistry and Metallurgy.

W. H. Seamon, Professor. D. C. Jackling, Assistant.

The courses in this Department have been arranged solely for the benefit of those who wish to prepare themselves for positions as Assayers, Chemists and Engineers. Instruction in the following courses is regularly given each session:

I. General Chemistry.—The instruction in this subject is communicated by lectures and recitations based upon Cook's Chemical Philosophy. Much time is devoted to regular exercises in Stoichometry.

II. Ore Concentration.—The instruction in this subject is exhaustively treated by lectures, and covers the following ground: 1. Physical properties upon which ore-dressing is based. 2. Theory of jigging and treatment of slimes. 3. Hand-dressing, cobbing, etc. 4. Crushing machinery. 5. Sizing machinery. 6. Assorting machinery; jigs, vanners, revolving tables, puddlers, settlers, etc. 7. Types of ore dressing plants. Drawings and photographs are employed to illustrate the work.

III. Metallurgy.—During the second term of the Intermediate year, Fuels, Refractory Materials, Furnaces and the general principles of Metallurgical operations are studied; followed in the Senior year by a thorough consideration of Metallurgy of Iron, Steel, Lead, Copper, Zinc, Silver and Gold. Philip's Elements of Metallurgy and the Professor's notes on American practice cover the course.

Works of Reference.—Crook's and Rohrig's, Eggleston's and Percy's Works and the Transactions of the American Institute of Mine Engineers.

IV. Blowpipe Analysis.—Fifteen hours each week, during the first term, are devoted to practical exercises with the blowpipe. The student is required to attain skill sufficient to readily detect the common metals, bases and acids in all their forms of occurrence. Erni's Blowpipe Analysis is used as a guide.

V. Qualitative Analysis.—Fifteen hours each week of the second term are devoted to practical exercises in Qualitative Analysis. The difficulties of these exercises are gradually increased and continued until the student is perfectly familiar with the subject.

VI. Assaying and Technical Analysis.—After the completion of the exercises in Qualitative Analysis, the student is required to make complete analyses of Barium Chloride, Di-Sodic Phosphate, Strontium Nitrate and Nickel Ammonium Sulphate.

This work is intended for the proper training in chemical manipulation necessary for accurate Quantitative work. The quick methods, fire, volumetric and gravimetric, employed by assayers and chemists in metallurgical plants are then taught and applied by the students to the analysis of ores of Copper, Zinc, Lead, Iron, Antimony, Tin and Manganese. Steel, Cast-Iron, Mattes, Slags, Fluxes and furnace materials are also considered and analyzed by the students. About 24 hours each week are required to complete the course mapped out.

VII. Mineral and Gas Analysis.—The work in this course requires 30 hours per week, and is intended to familiarize the student with the most accurate methods of analysis. Different methods of analysis are investigated and rare minerals examined, for the purpose of encouraging a spirit of investigation in the student.

The Professor's notes in conjunction with Fresenius' Qualitative and Quantitative Analysis are used as texts.

THE CHEMICAL LABORATORY.

The Chemical Laboratory has been in use six years, and has been found satisfactory. It was planned and built solely with reference to the work in the school, and the entire building is used by the Chemical department.

It consists of the quantitative laboratory, the qualitative laboratory, professor's laboratory, lecture room, assay laboratory and weighing room, a quantitative and qualitative evaporating room, preparation room, a supply room and two basement rooms, and furnishes accommodations for seventy-five students.

No pains have been spared to make the assay laboratory complete in every respect. It is located on the first floor, and not in the basement. The reduction furnace, as well as the muffle furnaces, is of the newest and best. Two large muffle furnaces, two smaller ones, one gas furnace, an ore crusher, pulverizing plate, ore and assay balances, with other facilities, are provided for the use of students.

Facilities for securing heat, light and ventilation are excellent; ample provision is also made for carrying off foul and dangerous gases; gas and water are supplied to each table. All parts of the building are thoroughly and judiciously equipped, and nothing has been left undone to make this laboratory one of the most complete in the country.

It is open to students daily from 8 a. m to 5 p. m.

Department of Mineralogy and Geology.

W. H. Seamon, Professor.

The instruction on these subjects begins with Determinative Mineralogy in the Junior year, and is continued with Systematic Mineralogy, Petrology and Geology in the Intermediate year.

Models, diagrams, natural crystals and goniometers are used in imparting a knowledge of the principles of Crystallography.

The course in Mineralogy is fully illustrated by a complete and well-arranged cabinet of minerals.

In addition to the usual course of Dynamical, Structural and Historical Geology, special attention is given to Chemical and Economic Geology. The course of instruction embraces the origin of vein stones and ore deposits, mineral waters, coal, petroleum and natural gas.

The study of geology is made interesting and practical by complete stratigraphical and paleontological collections, and by field-work and excursions.

Department of Mathematics.

W. B. Richards, Professor.

JUNIOR.

First Semester.—Trigonometry, Plane and Spherical, Fundamental Definitions and Formulæ—Construction and use of Logarithmic tables—Solution of triangles—Computation of actual heights and distances.

Second Semester.—Conic Sections and a few Higher Plane Curves.

Text-books: Wells' Plane and Spherical Trigonometry, Wentworth's Analytic Geometry. For reference—Todhunter's Plane and Spherical Trigonometry, Puckle's Conic Sections, Salmon's Conic Sections, Searle's or Henck's Field-book. Daily, both semesters, required in all the courses.

INTERMEDIATE.

First Semester.—Analytic Geometry of Three Dimensions, chiefly the Conicoids.

Second Semester.—Infinitesimal Calculus.

Text-books: Venable's Notes on Solid Geometry, Taylor's Elements of the Calculus (with Notes and Lectures). For reference—Salmon's, Todhunter's and Williamson's mathematical works. Thrice weekly, required in Courses I, II, III, V.

For students in Mining Engineering, to compensate for larger requirements in Chemistry and Metallurgy, a briefer treatment of the above subjects, extending through one term, will be given.

SENIOR.

Designed only for students in the special course in Mathematics and Physics (V), and such others as may wish to extend their mathematical studies beyond the usual undergraduate range; subject to variation from year to year, at the Professor's discretion, to meet the needs and accord with the purposes of the applicants.

First Semester.—Analytic Geometry and Calculus, select chapters of Salmon's Conic Sections and Williamson's Differential and Integral Calculus.

Second Semester.—Select portions of some two of the following subjects: Projective Geometry (Cremona), Theory of Equations (Todhunter), Determinants (Muir), Differential Equations (Forsyth), Quaternions (Kelland & Tait, and Tait).

Lectures on the history of Mathematics are given during the year.

The library contains the chief works on mathematics, in English, French and German, and affords the student an opportunity of extending his research at will.

Department of Physics.

A. L. McRae, Professor.

JUNIOR.

Both Semesters.—Elementary Mechanics: Twice weekly.

INTERMEDIATE.

Physics: This class meets three times a week and spends two afternoons a week in the Physical laboratory.

First Semester.—Meteorology, with special reference to rainfall and water supply; Heat, general principles, thermometry and calorimetry; Optics, optical instruments and photometry; Measurements in laboratory.

Second Semester.—Electricity and Magnetism; Telegraph and Telephone Circuits; Electrical testing in laboratory.

SENIOR.

First Semester.—Practical Photography: Required of students in Civil Engineering, elective for others. Once weekly.

Analytic Mechanics: Thrice weekly.

Second Semester.—Practical Astronomy: One lecture a week on determining time, latitude and longitude.

Electric Transmission of Energy: Two lectures a week. Electric lighting, electric railways, electric pumping, hoisting and ventilating apparatus will be studied.

Two afternoons a week throughout the year are spent in the laboratory.

Students in Metallurgy will also receive instruction in the electrical methods used in the extraction, purification and deposition of metals.

Graduate or special students in Physics, after completing the prescribed course, may take up Mascart and Joubert's Electricity and Magnetism, Fourier's Theory of Heat, Minchin's Kinematics and Williamson's Dynamics or Practical Electrical Engineering.

MODERN LANGUAGES.

A reading knowledge of French and German is a highly desirable part of a scientific education. The press of more immediately essential subjects has kept these languages from being included among the requirements of the Engineering degrees, though every student who can spare the time is advised to acquire at least one of them. In the course in Chemistry German is required, while both French and German are necessary for the degree in "Mathematics and Physics."

ACADEMIC COURSE.

The following Academic Course of study was established in pursuance of an act of the Legislature of Missouri, in 1885. It is designed to make the course equal in every respect to those offered at the best academies. As now arranged, it will commend itself especially to young men who wish to fit themselves for successful business or professional life, and to teachers who wish to prepare for higher work in their calling. The completion of the first year of this course admits the student to any of the professional courses without examination. A Diploma of Graduation will be granted to students who complete the course:

First Year.

First Semester.		*Second Semester.*	
Higher Arithmetic	5	Higher Arithmetic	5
Elementary Algebra	5	Elementary Algebra	5
American History	5	Physiology and Hygiene	3
English Grammar	5	Composition and Rhetoric	5

Second Year.

General History	5	General History	5
German	5	Civil Government	5
Geometry (Plane)	4	German	5
Zoology	5	Geometry (Solid)	4

Third Year.

English and American Literature	3	English and American Literature	3
Higher Algebra	5	Higher Algebra	5
German	3	German	3
Elementary Physics	3	Elementary Chemistry	3

Fourth Year.

Psychology	2	Logic	2
Physical Geography	2	Descriptive Astronomy	2
Trigonometry	5	Book-keeping (optional)	2
English History	5	Political Economy	5
		Botany	5

GENERAL INFORMATION.

BUILDINGS AND EQUIPMENTS.

The buildings of the School of Mines are situated in the most elevated part of the city of Rolla. They are substantial brick structures, well ventilated and lighted, and heated by the best furnaces manufactured. The main building has recently been painted and kalsomined throughout, and the laboratory, one of the most complete in the country, has been in use but six years.

The different departments of the School are well supplied with apparatus. Several hundred dollars have been expended this year in the purchase of instruments and apparatus for the departments of Engineering, Chemistry and Physics, and further purchases will be made as additional needs are felt and financial condition of the School will allow.

The students' club house, or dormitory, built in 1890, contains commodious and comfortable rooms for thirty young men. Two students occupy one room. The dining hall and culinary department can accommodate sixty. This year the students pay $12 a month for board in the club-house. Whenever they shall deem it desirable, the students will be allowed to form themselves into a club and employ their own caterer. In this manner it is believed that they will be able to board themselves at comparatively low cost.

Students wishing to engage rooms in the club building for next year should do so before September 1, as the supply of rooms may be exhausted. To engage a room a deposit of $5 is required as an earnest of good faith on the part of the student. This money will be refunded at the opening of the school whether the student take the room or not.

EXPENSES.

A matriculation fee of $10, payable on entrance, and a library fee of $2 a semester, payable on the first day of each semester, are required of every student.

All laboratory students furnish their own blowpipes, platinum, silver and gold solutions, crucibles and apparatus, and pay for gas and fuel consumed and for apparatus damaged or destroyed. A deposit of $5 per semester, covering the value of the apparatus and chemicals issued, is required to be placed in the hands of the Treasurer by each laboratory student. This deposit, less the value of material consumed, is returned at the close of the year.

Board, including fuel, lights, washing, etc., can be obtained for $12 to $15 a month. The necessary expenses for the year are as follows:

	Moderate.	Ample.
Matriculation fee	$10 00	$10 00
Library fee	4 00	4 00
Books, stationery and chemicals	15 00	25 00
Board, fuel, lights, washing, etc	96 00	135 00
Total	$125 00	$174 00

LIBRARY.

The library contains 3000 volumes. Extensive works upon Engineering, Mathematics, Chemistry, Physics, Assaying and Metallurgy afford to all students in these departments an excellent opportunity to pursue an extended course of reading in connection with their class work. The library also contains the standard works in English and American poetry, fiction, biography and history, provided with especial view to the needs of Academic students. The following periodicals for the current year are found on the reading tables of the library:

American Chemical Journal.
American Journal of Science.
American Journal of Mathematics.
Annals of Mathematics.
Century Magazine.
Chemical News.
Electrical World.
Engineering Magazine.
Engineering News.
Engineering and Mining Journal.
Forum.
Harper's Monthly.
Harper's Weekly.
Public Opinion
Puck.
Railroad and Engineering Journal.
Science.
Journal of Analytical and App. Chemistry.
Judge.
Ladies' Home Journal
Leslie's Illustrated Weekly.
Life.
Literary Digest.
Lippincott
Nature.
Nation.
North American Review.
Philosophical Review
Popular Science Monthly.
Popular Science News.
Scribner's Magazine.
Scientific American.
Scientific American Supplement.

The library is open daily from 8 a. m. to 4 p. m. Books may be taken out by the students under certain regulations.

ATHLETICS.

Through the liberality of the Curators an athletic field has been enclosed and graded for the benefit of the students. It furnishes ample space for base-hall, foot-hall and lawn tennis. An athletic association exists among the students, and it is hoped that means will soon he provided for the erection of a gymnasium.

LITERARY SOCIETIES.

Two literary societies were organized during the year—the Philo Literary society by the young men and the Alpha club by the young women of the school. The "Alpha" meets every Saturday afternoon and the "Philo" every Saturday evening for improvement in debate, oratory and composition.

EXAMINATIONS.

During the last week of each semester all students are required to stand written examinations on the studies pursued, and the results of these examinations, with the average monthly grades, determine their semester grades A student, to pass, must attain at least 75 per cent.

MONTHLY REPORTS.

Regular monthly reports are sent to the parents or guardians of each student, showing the student's grade in scholarship for the month, and giving such other information in regard to his progress, attendance, etc., as may be thought to he of interest. The attention of parents and guardians is particularly called to these reports.

DEGREES.

UNTITLED DEGREES.

1. A Certificate of Proficiency is conferred on one who has attained the required standard in all work in any of the following special courses: Geology and Mineralogy, General Chemistry, Fire Assaying, Botany and Zoology, Physics, Geodesy.

2. A Diploma of Graduation is conferred on one who has passed in any of the following departments: Mathematics, Physics, Analytical Chemistry, Engineering, and the Academic course.

SCIENTIFIC DEGREES WITH TITLES.

1. The degree of Bachelor of Science in Mathematics and Physics is conferred upon one who has passed examinations on all the subjects of instruction in the course of Mathematics and Physics.

2. The degree of Bachelor of Science in Chemistry is conferred on one who has passed examinations on all of the work of the special Chemical course.

PROFESSIONAL DEGREES WITH TITLES.

1. The degree of Bachelor of Science in Civil, Mining or Mathematical Engineering, respectively, is conferred on one who has passed examinations on all of the subjects of instruction in the Civil, Mining, Mechanical Engineering Course, respectively.

2. The degree of Civil, Mining or Mechanical Engineer is conferred on one who, having graduated in Civil, Mining or Mechanical Engineering and received the Bachelor's degree therein, has identified himself with the profession during a period of not less than three years, and during that time has demonstrated hy work his fitness for his chosen profession.

COMMENCEMENT.

The annual Commencement exercises are held in the Assembly room, at the close of the work in June. The exercises consist of an address by some prominent speaker, the conferring of the degrees and granting of diplomas by the Director, and the reading of abstracts of their theses by members of the graduating class.

At the Commencement exercises on Thursday, June 9, 1892, the address was delivered by Dr. R. H. Jesse, President of the University.

The following is a list of the Graduates and the degrees conferred:

GRADUATES.

Mining Engineering, F. A. Jones.
Civil Engineering, F. A. Jones, F. L. Tyrrell.
Analytic Chemistry, D. C. Jackling, F. A. Jones.
Assaying, D. C. Jackling.

DEGREES.

Bachelor of Science (in Chemistry), D. C. Jackling, E. M. Johnson.
Civil Engineer, F. A. Jones, F. L. Tyrrell.
Mining Engineer, F. A. Jones.

LIST OF STUDENTS.

ACADEMIC STUDENTS.

Name	Postoffice.	County.
GRADUATES.		
Brown, Geo L	Reynard	Bates
Conley, Milton R	Columbia	Boone
Early, Leslie N	Huntsville	Randolph
Fellows, John N	Weston	Platte
Johnston, Eva	Columbia	Boone
Skaggs, Wm. Leslie	DeSoto	Jefferson
Williams, Frank B	Warrensburg	Johnson
		—7
UNDER-GRADUATES.		
SENIOR CLASS.		
Adams, Jennie	Shelbina	Shelby
Anthony, Francis R	Maryville	Nodaway
Asendorf, Geo. Wm. H	Craig	Holt
Beach, Emory V	Helena, Mont	
Buffington, Samuel A	Salisbury	Chariton
Debord, King	Fillmore	Andrew
Hanszen, Lydia	Jefferson City	Cole
Hodge, Robt. J	Brunswick	Chariton
Kiehl, Herman G	Beemont	Franklin
Meyer, Jesse	Salisbnry	Chariton
Pettingill, Minnie	Centralia	Boone
Westlake, Ruby M	Midway	"
Westlake, Nancy P	"	"
Wilkinson, Jno. W	Columbia	"
Zillman, C. C H	Indian Grove	Chariton
		—15
JUNIOR CLASS.		
*Adams, Vinnie	Shelbina	Shelby
*Beazley, Geo. H	Columbia	Boone
*Conley, Wm. Thos	"	"
Gaines, Chas. L	Marshall	Saline
Gerig, Ida	Columbia	Boone
Goslin, Benj. F	Hinton	"
Harris, Herman F	Columbia	"
*Kahn, Otillie	Brookfield	Linn
*Leaver, Florence N	Chillicothe	Livingston
*McCulloch, Albert J	Pisgah	Cooper
*Riggs, Inez	Curryville	Pike
Shaefer, Jean A	Columbia	Boone
*Wade, Jno F	Bolckow	Andrew
*Wettack, Elmer E	Marshall	Saline
*Wettack, Jno. A	"	"
		—15
SOPHOMORE CLASS.		
*Allen, Edward T	Columbia	Boone
*Almstedt, Herman B	St Charles	St Charles
Barnett, Mary Jessie	Columbia	Boone
*Beauchamp, Clara L	California	Moniteau
*Botts, Wm Ford	Kansas City	Jackson
*Broadhead, Garland C	Columbia	Boone
*Cooper, James W	"	"
*Evans, Geo. A	Carthage	Jasper
*Ficklin, Walter H	Columbia	Boone

*Students whose names are marked with a star have work below the class in which their names appear.

Name.	Postoffice.	County.
*Gudgell, Frank O	Independence	Jackson
Haydon, Curtis	Deer Park	Boone
Stampfli, Geo. J	Jefferson City	Cole
Stone, Kimbrough	Nevada	Vernon
*Wilkerson, Geo. R	Sedalia	Pettis
*Williams, David E	Conway	Laclede
		—15
FRESHMAN CLASS.		
Barnett, Bruce	Sedalia	Pettis
Barnett, Jas. S	Columbia	Boone
Boyer, Jno. S	Easton	Buchanan
*Bush, Chas. A	Centralia	Boone
*Byers, Chas E	St. Louis	
Caskie, Jno J. K	"	
Cosgrove, Jas. W	Booneville	Cooper
*Crafton, Minnie	Jefferson City	Cole
*Creason, Goodwin	Centralia	Boone
Crossley, Wallace	Mexico	Audrain
*Davis, Geo. T	Sheldon	Vernon
*Detweiler, Andrew J	Washington	Franklin
*Dungan, Harry M	Hopkins	Nodaway
*Fischer, Oscar E	Salem	Dent
*Gordon, Chas. M	California	Moniteau
*Gustin, Charles	Edgerton	Platte
*Gwinn, Arthur	Sprague	Bates
*Harrison, Cora	Bethany	Harrison
*Harrison, Grace	"	"
Hinde, Wm. H	Mexico	Audrain
*Kuehls, Jos.	Higginsville	Lafayette
*Major, John Wm McG	Blackburn	Saline
*Marshall L J	Molino	Audrain
*Massengale, Jas. R	St. Louis	
*Matthews, Orlow B	Macon City	Macon
*Matthews, Otho F	"	"
*McCutchan, Ella B	Bunker Hill	Lewis
*McCutchan, Ignatius	"	"
*McCutchan, Joseph	"	"
*Moore, Washington	Columbia	Boone
*Oldham, Silas E	Kansas City	Jackson
*Pearson, Albert McA	"	"
*Perrin, Clark	Columbia	Boone
Pollard, Janie E	Norborne	Carroll
*Robertson, Wm. W	Palmyra	Marion
*Rogers, Jno S	Slater	Saline
*Rosenthal, Rosa	Moberly	Randolph
*Rothwell, Rolla R	Hoover	Vernon
*Strong, Chas M	Houston	Texas
*Sutherland, Virginia	Clinton	Henry
*Tannehill, Maud E	California	Moniteau
*Taylor, Earl M	Fairfield, Ill	
*Taylor, Jas. W	Pendleton	Warren
*Thompson, Benj. Lee	Carthage	Jasper
*Tyree, Cora L	Leonard	Shelby
*Vallier, Jas.	Slater	Saline
*Vaughan, Clara L	Ashland	Boone
*Westbrook, Jno C	Strother	Monroe
*Wood, Jno H	California	Moniteau
*Wood, Walter F	Nevada	Vernon
*Young, Wm. C		—51
PREPARATORY CLASS.		
Adams, Arthur N	Buckner	Jackson
Adams, Geo. P	King City	Gentry
Adams, Mary E	Columbia	Boone
Adams, Thos B	Norborne	Carroll
Allee, Gail D	Olean	Miller
Allen, Mary S	Columbia	Boone
Anderson, S-m'l J	"	"
Baker, Hugh E	"	"
Barnes, Chas M	New Madrid	New Madrid
Barth, Irvin V	Columbia	Boone
Bateman, Jesse O	"	"
Beazley, Arthur P	"	"
Blackwell, Laura C	"	"
Blanton, David A	"	"
Blanton, Martha B	"	"
Booth, Jno. N	Shackelford	Saline
Botts, McDowell	Kansas City	Jackson

*Students whose names are marked with a star have work below the class in which their names appear.

Name.	Postoffice.	County.
Bright, Jno. McK	Columbia	Boone
Broadhead, Marion G	"	"
Burnham, Emma D	"	"
Campbell, Henry R	"	"
Chowning, Orville	Madison	Monroe
Coffman, Harry L	Commerce	Scott
Coleman, Augustus C	Columbia	Boone
Coleman, Robt. L	"	"
Combs, Clark W	Leavenworth,Ks	
Conley, Dudley S	Columbia	Boone
Cooper, Ole Chas	Moundville	Vernon
Corner, Albert W	Worcester	Audrain
Creason, Beni. F	Centralia	Boone
Donnohue, Bell D	Columbia	"
Duncan, Clark B	Olney	Lincoln
Dunn, Wm. V	Bethany	Harrison
Dysart, Martha C	Columbia	Boone
East, Chas W	Troy	Lincoln
Edwards, Arthur C	Jefferson City	Cole
Estes, Berkeley	Columbia	Boone
Fewsmith, Stella	"	"
Fischer, Chas. A	Dora	Ozark
Fosher, Manassah E	Leverton	Linn
Gerig, Jno. G	Columbia	Boone
Grayson, Conway	Grayson	Clinton
Hall, Chas. R	Harrisonville	Cass
Hall, Mary L	Bedford	Livingston
Haymes, J. E	Conklin	Webster
Henderson, Cicero	Strother	Monroe
Hendrick, Ernest	Bowling Green	Pike
Higginbotham, Levi S	Louisville	Lincoln
Hilt, Samuel W	Buckner	Jackson
Hummel, Ellis	Prosperity	Jasper
Jacks, Harry S	Montgom'y City	Montgomery
Jacobs, Wm T	Eolia	Pike
Jennings, J. R	Columbia	Boone
Jennings, Wm O	"	"
Johnson, Frank L	"	"
King, Roy	Linn Creek	Camden
Lane, Chas. W	Midway	Boone
Lanning, Jno. H	Ste Genevieve	Ste. Genevieve
Leavenworth, Geo	Greenville, Miss.	
Leonard, Jas L	Pleasant Hill	Cass
Marshall, Archie M	Moliro	Audrain
Manpin, Robt. E	Maud	Shelby
Maxwell, Emmett	Millersburg	Callaway
Maxwell, Wm. Robt	"	"
McAlester, Andrew	Columbia	Boone
McClane, Jean E	"	"
McComas, Edwin G	Sturgeon	"
Miller, Wm. A	Rocheport	"
Mitchell, Robt. E	Columbia	"
Monser, Frank	"	"
Morris, Marvin O	Gray's Point	Lawrence
O'Mahoney, Lafayette	Columbia	Boone
Palmer, Wilmot C	Points	"
Pannell, Geo H	Columbia	"
Parmer, Chas. C	"	"
Peeler, Chas. F	White's Store	Howard
Peery, Wm. E	Brunswick	Chariton
Perdue, Jno. H	Sedalia	Pettis
Phillips, Jno. H	Dripping Spr'gs.	Boone
Pickett, Levi E	Galt	Grundy
Pollard, Chas B	Eolia	Pike
Powell, Bessie	Columbia	Boone
Powers, Lewis T	Young's Creek	Audrain
Ramey, Sam'l J	Berlin	Gentry
Rhodes, Walter R	Mosby	Clay
Robbins, Jas. K	New Madrid	New Madrid
Robinson, Clark	Deer Park	Boone
Scott, Thos	Ashland	"
Sexton, Floyd	Millersburg	Callaway
Sims, Jno H	Hazen, Ark	
Starks, Jno C	Gower	Clinton
Stephens, Hugh M	Columbia	Boone
Switzler, Royal H	"	"
Talpey, Jas. R	Knob Noster	Johnson
Taylor, Joshua B	Palmyra	Marion
Terrill, Cora C	Farcett	Buchanan
Thomas, Thomas	Edgerton	Platte

Name.	Postoffice.	County.
Thompson, Edgar S.	Brown's Station	Boone
Thompson, Frank F.	Belle Fonte	Pulaski
Thompson, Guy A.	Columbia	Boone
Thompson, Geo. E	"	"
Tyree, Jesse	Carthage	Jasper
Vance, Jas. Wm	Fairfield	Benton
Walker, Nellie	St. Joseph	Buchanan
Westlake, Jas. E	Huntsville	Randolph
Wiatt, Wm. S	Cyrene	Pike
Wilhite, Jos. V	Oxford	Worth
Willoughby, Claude	Tamaroa, Ill	
Wilson, Frank L	Louisville	Lincoln
Wilson, Walter W	Shawnee Mound	Henry
Young, Fred.	Columbia	Boone
Zick, Bernard.	Pleasant Hill	Cass
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SPECIAL STUDENTS.

Barnett, Geo. Harlem	Columbia	Boone
Barnett, Sentiny R.	"	"
Bihr, Sam'l W	"	"
Botts, Francis V	Molino	Audrain
Brooks, Orphred H	Montgom'y City	Montgomery
Caldwell, Charles W.	Slater	Saline
Cauthorn, Louisa L	Columbia	Boone
Campbell, Eula G.	"	"
Craig, Sam'l O	Cyrene	Pike
Dalton, Jno D	Saverton	Ralls
Davidson, Jas H.	Little Rock	Saline
Dodson, Anna W	Columbia	Boone
Downing, Rob't E.	"	"
Edwards, Granville D.	"	"
Ellis, Jno. Lee.	"	"
Eppes, Thos J	"	"
Evans, Ivy Ella	N. Kansas City	Clay
Freeze, Edwin	Dadeville	Dade
Griffith, Angie R	Chillicothe	Livingston
Griffith, Wm. W.	"	"
Guitar, Odon	Columbia	Boone
Guthrie, Rob't M.	Josephville	St Charles
Hall, Jennie L	Bedford	Livingston
Hernleben, Henry	Jamestown	Moniteau
Houston, Jno. C.	Hallsville	Boone
Huston, Arthur E.	Marshall	Saline
Hutchinson, Frank P.	Jamesport	Daviess
Hutchison, Sam'l M.	Shelbyville	Shelby
Ingrum, Linnie	Belton	Cass
Jacobs, Chas C.	Columbia	Boone
Jarvis, Robert E	Moberly	Randolph
Kemp, Geo. Ward.	Salida, Colo	
Long, Laura V.	Columbia	Boone
Lynch, Dora A	Edwardsville, Ill	
Manring Jno. F	McFall	Gentry
Mason, Louis S	Mexico	Audrain
May, Robert A	Wentzville	St Charles
McNeely, Jno. D.	St. Joseph	Buchanan
Meyersieck, V E	Union	Franklin
Mikel, Henry F	Columbia	Boone
Morrow, Wm C.	Viola	Stone
Murry, Harvey D	Stephens' Store	Callaway
Norfleet, Viola	High Point	Moniteau
O'Hearn, Jno R	Slater	Saline
Phillips, Geo. B	Dripping Spr'gs	Boone
Price, Stuart R.	Plattsburg	Clinton
Riggs, Norman C.	Farmer	Pike
Rowell, Frank D	Ekron, Ky	
Shafer, Arthur B.	Nevada	Vernon
Shickles, Jno. R.	Enon	Moniteau
Smith, Camille	Columbia	Boone
Smith, Chas. E	"	"
Smith, Jno. B	Kansas City	Jackson
Stampfli, Geo J.	Jefferson City	Cole
Turner, Edwin	Columbia	Boone
Warren, Earle	Ionia City	Pettis
Wheeler, Claude M.	Norborne	Carroll
Wickham, Frank D.	Jefferson City	Cole
Wilhite, Osc r C.	Grant City	Worth
Williams, Calvin W.	Pearl	Greene
Wood, David P.	Platte City	Platte
		—61

Name.	Postoffice.	County.
STUDENTS IN COLLEGE OF AGRICULTURE.		
(Students taking the full course of study.)		
Baker, Joseph Glenn	Thompson	Audrain
Barnett, Sentiny R	Columbia	Boone
Beasley, Montie L	"	"
Bretz, Wm. Shull	Frazier	Buchanan
Bulla, Julian	Empire Prairie	Andrew
Chuhbuck, Wiuthrop P	Kidder	Caldwell
Conley, Abraham H	Columbia	Boone
Conger, Geo. C	"	"
Conover. Chas C	Peculiar	Cass
Daniel, Geo E	Thompson	Audrain
Farley, Louis R	Columbia	Boone
Goodwin, Robt. C	Warren	Marion
Guitar, Odon Jr	Columbia	Boone
Hickman, Thos. B	"	"
Huber, Chas	Westphalia	Osage
Jacobs, Chas. C.	Columbia	Boone
Knox, Hen y M	Omaha, Neb	
Lillard, Alonzo	Carrington	Callaway
Lillard, Dosha	"	"
May, D. W	Warrensburg	Johnson
Moore, Washington R.	Bunker Hill	Lewis
Norfleet, Robt. A	High Point	Moniteau
Sears, Alonzo J	Barrett	Morgan
Siersdorfer, R. Wm	Kansas City	Jackson
Weeks, Edwin C	Eldon	Miller
Woodruff, Robt L	Orrick.	Ray
Wyatt, Marquis W	Rockport	Atchison
		—27
Special Students from other Departments Taking One or More Studies in this College		
Alspau, Stella	Columbia	Boone
Adams. Arthur N	Buckner	Jackson
Baker, Hugh E	Columbia	Boone
Baender, Chas L	Moberly	Randolph
Bautzer, Edw H	Chamois	Osage
Bright, Jno. McK	Columbia	Boone
Bear, Hugh M	Tipton	Moniteau
Browning, H. M		
Brown, Emma M	Brown's Station	Boone
Burnham, Nannie	Columbia	"
Burnham, Sallie	"	"
Baumgartner, Georgie	"	"
Brock-nbrough, Mary	"	"
Bihr, Samuel W	"	"
Burgess, Elijah	DeSoto	Jefferson
Berkebile, Aletha L	Columbia	Boone
Brace, Penn	Jefferson City	Cole
Bashaw, Wm. M	Columbia	Boone
Burnham, Edna	Dripping Spr'gs	"
Balthis, F S	Huntsville	Randolph
Craig, Sam'l O	Cyrene	Pike.
Corner, Albert Watson	Worcester	Audrain
Canthorn, Ed. B	Columbia	Boone
Carter, Jas M	Worcester	Audrain
Cope, A. Nathan	Kingston	Caldwell
Crecelius, Harry A	Mehlville	St. Louis
Davie, Wm. Ford	St. Louis	
Doty, A H	Jamesport	Daviess
Dunham, Albert.	Bevier	Macon
Duncan, Clark	Olney	Lincoln
Edwards, Granville D.	Columbia	Boone
Furtney, Chas. W	Trenton	Grundy
Fyfer, Jno K	Columbia	Boone
Fowler, Harry G	Chillicothe	Livingston
Fowler, Thos R.	Sedalia	Pettis
Gerling, August	Columbia	Boone
Guitar, Odon Jr.	"	"
Grayson, Conway	Grayson	Clinton
Hodge, Robt W	Brunswick	Chariton
Highley, Lee	Farmington	St. Francois
Jackson, Nathaniel D	Independence	Jackson
Kinney, Noble W	Boonville	Cooper
Lacoff, Leo F	Nevada	Vernon
Lockwood, Frank Levy	Rockport	Atchison
Lotter, Harry H	Moberly	Randolph

Name.	Postoffice.	County.
Lawrence, Alonzo W	Bowling Green.	Pike.
Mikel, Henry F	Columbia	Boone
Mason, Elliot J	Mexico	Audrain
Manly, Chas M	Greenville, S. C.	
McCrary, Willard L	Eldorado Sp'gs	Cedar
McAlester, Edgar	Columbia	Boone
Mockler, Chas R	Horine	Jefferson
Newman, Roy F	Columbia	Boone
Peake, Geo R	Kansas City	Jackson
Parker, Pascal	Jefferson City	Cole
Renoe, Chas F	Guthrie	Callaway
Roper, Wm. H	Nichols	Greene
Rhett, Albert	Baltimore, Md.	
Rothwell, Rolla R	Moberly	Randolph
Stayton, E M	Kansas City	Jackson
Sliger, Winfred E	Phelps City	Atchison
Shawhan, Thos. R	Lone Jack	Jackson
Skelly, Jas W	Mexico	Audrain
Shipman, Robt. L	Holden	Johnson
Small, Frank J	Trenton	Grundy
Seymour, W T	Sturgeon	Boone
Thompson, J D	Mound City	Holt.
Todd, Ben	Columbia	Boone
Thompson, Thos. W	Pendleton	Warren
Veach, S J.	Columbia	Boone
Warren, Earl	Ionia City	Pettis

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NORMAL STUDENTS.

Alspau, Stella P	Columbia	Boone
Bautzer, Edward H	Chamois	Osage
Bear, Hugh M	Tipton	Moniteau
Berkebile, Aletha L	Brown's Station	Boone
Boman, Jno S	Roads	Carroll
Borrow, Jno A	Rich Hill	Bates
Brown, Emma M	Dripping Spr'gs.	Boone
Browning, Oliver P	Molino	Audrain
Burnham, Nannie	Columbia	Boone
Burnham, Sallie E	"	"
Calvin, Robt. L	Grant City	Worth
Coil, Jas H	Perry	Ralls
Daily, Bessie	Columbia	Boone
Dowell, Jas R	Ekron, Ky	
Dysart, Maria	Brown Station	Boone
Eckley, Katie R	Stephens Store	Callaway
Edwards, Mitchell M	Hamilton	Caldwell
Fewsmith, Joy	Columbia	Boone
Flynt, Wm R	Points	"
Fulton, Arthur L	Harrisonville	Cass
Gillaspie, Wm A	Columbia	Boone
Goldsberry, Willard	Dripping Spr'gs.	"
Hall, Sallie A	Columbia	Boone
Hamilton, Ed R	"	"
Hodge, Robt. W	Brunswick	Chariton
Holman, Jurney H	Hartford	Putnam
Laws, Lena	Columbia	Boone
Mahan, Maria L	"	"
Martin, Howard S	Lancaster	Schuyler
Meyer, Jesse	Salisbury	Chariton
Northcutt, Lewis	Saverton	Ralls
Pauley, Anna L	Columbia	Boone
Peeler, Geo K	Rockville	Bates
Powell, Herman C	Columbia	Boone
Renoe, Chas F	Guthrie	Callaway
Richards, Alice M	Columbia	Boone
Riehl, May	Potosi	Washington
Riggs, Nellie May	Bowling Green	Pike
Rouner, Ashby W	Newark	Knox
Schwabe, Rachel L	Columbia	Boone
Steele, Asa G	Wellsville	Montgomery
Stewart, Florence	Columbia	Boone
Strickler, Kate	Freeman	Cass
Strickler, Nana	"	"
Thurston, Hollis H	Woodlandville	Boone
Waugh, Roberta M	Rothwell	Chariton
Wiatt, Wm. S	Cyrene	Pike
Wilkinson, Jno W	Columbia	Boone
Wilkinson, Eugene A	"	"
Zillman, Christian C. H	Indian Grove	Charlton

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Name.	Postoffice.	County.
Teachers' Course.		
Barnes, Henry J	Avalon	Livingston
Bedford, Sudie	Rowena	Andrain
Byrd, Thos S	Hematite	Jefferson
Cahall, Addie	Wellsville	Montgomery
Condict, Wayne E	Lamar	Barton
Conran, Jas F	Columbia	Boone
Corlew, Maggie	"	"
Daily, Rosa A	"	"
Denham, Fannie	Mount Zion	Henry
Denham, Lulu Alice	"	"
Eldridge, Jas	Sullivan	Franklin
Fluesmeier, Emily S	Schluersburg	St. Charles
Fluesmeier, Elvira L	"	"
Gregg, Dollie I	Wyaconda	Clark
Heisler, Mary	Columbia	Boone
Hofsess, Jno Wm	Benton City	Audrain
Horning, Clotilda	Springfield	Greene
Harrington, Edward C		
Honston, Jas M	Raymore	Cass
Kasel, Aug Chas	Dundee	Franklin
Kleinsorge, Wm F	Shotwell	"
Marshall, Nobia	Renick	Randolph
Murry, Nettie	Browno's Station	Boone
Oldham, William A	Bosworth	Carroll
O'Rear, Meranda	Centralia	Boone
Patterson, Edwin S	Young's Creek	Andrain
Thomas, Evalina	Camden Point	Platte
Todd, Mary	Shelbyville	Shelby
Sampson, Margaret F	Columbia	Boone
Speer, Edward Jas	Fairmont	Clark
Wilcox, Hattie	Wyaconda	"
Wilhite, Anna Z	Oxford	Worth
Whiffin, Harry H	Kansas City	Jackson
Walker, Robt Lee	Nevada	Vernon
		—34
LAW STUDENTS.		
GRADUATE CLASS.		
Randolph, Wm. F	Wellsville	Montgomery
Truitt, Wm. H	Columbia	Boone
		—2
SENIOR CLASS.		
Barr, Guy C	St. Joseph	Buchanan
Beach, Emory V	Helena, Mont	
Blackwell, Wm F	Pattonville	St Louis
Bond, Samuel W	St. Marys	Ste Genevieve
Botts, Hosea T	Novelty	Knox
Corum, Chas D	Boonville	Cooper
Cravens, Wm B	Fort Smith, Ark	
Davis, Sidney E	St. Louis	
Dempsey, Luther N	Rothville	Chariton
Ellis, Chas M	Hermann	Gasconade
Felker, Henry C	Vienna	Maries
Goodrich, Jno E	Cameron	Clinton
Groves, Hiram J	Dover	Lafayette
Holmes, Albert S	Hannibal	Marion
Loeb, Isador	Columbia	Boone
McCurdy, Geo V	Sedalia	Pettis
Murry, Jerry H	McCreedie	Callaway
Ray, Fred P	Kansas City	Jackson
Sparrow, Wm. S	Vandalia	Audrain
Strother, Samuel B	Kansas City	Jackson
Swarner, Wm H	Clarksburg	Moniteau
Timberlake, Estill M	Warren	Marion
Williams, Joseph G	Hillsboro	Jefferson
		—23
JUNIOR CLASS.		
Burton, Wm. E	Bonbon	Crawford
Beckers, Casper H. L	Normandy	S. Louis
Bury, Albert S. J	Edgerton	Platte
Brace, Penn	Jefferson City	Cole
Buffington, Samuel A	Salisbury	Chariton
Byrd, Richie L	Hematite	Jefferson
Coil, James N	Nevada	Vernon
Collins, Zenas S	Smithville	Clay
Coons, James H	Palmyra	Marion

Name.	Postoffice.	County.
Cooper, Charles Mason	Morley	Scott
Gerling, Henry J	Columbia	Boone
Granger, Orin W	St. Louis	
Gross, Charles	Lawson	Ray
Harn, William L	Columbia	Boone
Hinsley, Walter L	Jarvis	Jefferson
King, Melville S	Lake City, Ia.	
Latimer, Chas. W	Independence	Jackson
Meigs, Wellington H	Siloam Spr., Ark	
Nelson, Thomas L	Cappingler's M	Cedar
Niedermeyer, Fred. W	St. Louis	
Smith, James LeRoy	Kansas City	Jackson
Poland, Joseph R	Round Grove	Lawrence
Thomas, Nathan C	Pearl	Greene
Thurman, Anderson W	Rich Hill	Bates
Turner, Kirk B	Columbia	Boone
Walker, Harry B	Skidmore	Nodaway
White, James P	Fayette	Howard
Wilkson, Charles P	Bonne Terre	St. Francois
		—28
SPECIAL CLASS.		
Crook, L E	Roscoe	St. Clair
Gerig, Edward	Columbia	Boone
Lane, Thomas F	Poplar Bluff	Butler
Shouse, Paul	Columbia	Boone
		—4
MEDICAL STUDENTS		
Allen, Wm. Wright	Middle Grove	Monroe
Angel, Wm E	Rocheport	Boone
Baker, Charles M	Paris	Monroe
Belden, Wm. Everett	Columbia	Boone
Blakely, Wm A	Mendon	Chariton
Briegleb, Charles F	St. Clair	Franklin
Cook, Richard F	Centralia	Boone
Downing, S W	"	"
Ferguson, John Porter	Ft Worth, Texas	
Graham, Robert Emmett	Clarks. Ohio	
Green, David Elisha	Platte City	Platte
Hoffner, Ernest Louis	Hermann	Gasconade
Hunter, Wilbur Clinton	Trenton	Grundy
Jordon, James Ernest	Hinton	Boone
Kurtz, Daniel Webster	Columbia	"
Locker, George Everett	Duvall	Barton
Lockwood, Wm Duncan	Rockport	Atchison
McCullah, Willis Austin	Marion	Cole
McClane, Otto N	Columbia	Boone
McGuire, Morris	"	"
McQuitty, James Wm	Midway	"
Newman, Caro Warder	Columbia	"
Parmer, John Elvin	"	"
Quinn, Abram Turner	"	"
Reed, Orson Davis	Tulip	Monroe
Rutherford, Henry H	Fort Smith, Ark	
Shaffer, Harry Irving	Dallas, Texas	
Shafler, Wm. Rothwell	Columbia	Boone
Shrader, Eugene Wesley	Paris	Monroe
Smith, August	Hermann	Gasconade
Smith, H C	Sedalia	Pettis
Steele, Wm Arthur	Wellsville	Montgomery
Taylor, Arthur G	Prairie Home	Cooper
Thornton, Joseph E	Rocheport	Boone
Treadway, Oscar Herbert	Paynesville,	Pike
Truitt, Samuel Watson	Millersburg	Callaway
Turner, George Samuel	Columbia	Boone
Young, Melvin Meredith	Marshall	Saline
Wade, Fernando Harding	Columbia	Boone
		—39
ENGINEERING STUDENTS.		
Baender, C. L	Moberly	Randolph
Balthis, F L	Huntsville	"
Bashaw, W M	Columbia	Boone
Carter, J M	Worcester	Audrain
Cauthorn, E B	Columbia	Boone
Cope, A. N	Kingston	Caldwell
Crecelius, H. A	Melville	St. Louis
Davie, W. F	St. Louis	
Davis, W. E	Pt. Pleasant	New Madrid
Dinsmore, G	Kirksville	Adair

Name.	Postoffice.	County.
Doty, A. H	Jamesport	Daviess
Dunham, A	Bevier	Macon
Fowler, H. G	Chillicothe	Livingston
Fowler, T. R	Sedalia	Pettis
Furtney, C W	Trenton	Grundy
Fyfer, J. K	Columbia	Boone
Garrett, R. P	Mound City	Holt
Gerling, A.	Columbia	Boone
Griggs, A B	Hedge City	Knox
Hickman, T. H	Columbia	Boone
Highley, Lee	Farmington	St. Francois
Jackson, N. D	Independence	Jackson
Joy, F. E	Ravenwood	Nodaway
Lawrence, A. W	Bowling Green	Pike
Lockwood, F. L	Rockport	Atchison
Lockwood, M. H	"	"
Lyman, R. E	Columbia	Boone
Lotter, M. E	Moberly	Randolph
Lynch, W. G	Shackelford	Saline
Manly, C M	Greenville, S. C	
Mason, E. J	Mexico	Audrain
Mayer, E. M	St. Joseph	Buchanan
McAlester, E	Columbia	Boone
McCrary, W. L	Eldorado Spr'gs	Cedar
Merriwether, J. D	Aberdeen	Pike
Metcalf, Thos	Maitland	Holt
Miller, G E	Weldon Springs	St Charles
Mockbee, C. R	Horine	Jefferson
Moore, Robt	Linneus	Linn
Noggle, J R	Unionville	Putnam
Parker, P	Kansas City	Jackson
Peake, G R	"	"
Pratt, J. K	Columbia	Boone
Rhett, A	Baltimore, Md	
Robinson, E. W	San Antonio, Tex	
Roper, W. H	Nichols	Greene
Rucker, R. F	Avenne City	Andrew
Seymour, W H	Sturgeon	Boone
Sanders, J L	Memphis	Scotland
Shawhan, D. L	Lone Jack	Jackson
Shawhan, T. R	"	"
Shipman, R L	Holden	Johnson
Skelly, J. W	Mexico	Audrain
Sliger, W E	Phelps City	Atchison
Small, F. J	Trenton	Grundy
Stayton, E D	Independence	Jackson
Truitt, C	Columbia	Boone
Thompson, T. W	Pendleton	Warren
Thompson, J. D	Monnd City	Holt
Uhlman, L	St. Joseph	Buchanan
Veach, S. J	Osceola	St. Clair
Wickham, A. C	Jefferson City	Cole
Withersnoon, B H	Gaines	Henry
Young, C. E	Mound City	Holt

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STUDENTS OF THE SCHOOL OF MINES.

Alexander, George Ernest	Maryville	Nodaway
Anderson, Perry Barton	Neosho	Newton
Bradford, Robert Edward Lee	Spring Creek	Phelps
Branson, Charles Sylvester	Byron	Osage
Branson, Dennis Sydney	"	"
Brewster, James Madison	Macedonia	Phelps
Buskett, Mary Page	Rolla	"
Campbell, Engene	"	"
Cansler, Gussie Kathryne	"	"
Case, Allen Bertley	Lecoma	Dent
Clark, Charles Frederick	Lebanon	Laclede
Cleino, Charles Conrad	Rolla	Phelps
Connelly, George Joseph	Denver, Colo	
Cook, Edwin Wallace	Competition	Laclede
Corse, Lottie Edith	Rolla	Phelps
Cowen, Herman Cyril	Bethany	Harrison
Dean, George Walter	Rolla	Phelps
Deegan, Agnes Julian	"	"
DeLay, Theodore Stuart	Creston, Ia	
Dilworth, William	Salem	Dent

Name.	Postoffice.	County.
Donnan, David McAnally	Elk Prairie	Phelps
Donnelly, Arthur	Lebanon	Laclede
Donnelly, Sophia Mary	"	"
Dwyer, Edward	Joplin	Jasper
Dyer, Temple	Rolla	Phelps
Flett, James Cyrus	Salem	Dent
Florreich, Philip	St. Louis	
Flynn, Frank Nicholas	Denver, Colo	
Freeman, Etna Josephine	Relfe	Phelps
Germann, Frank Arthur	Rolla	"
Gilbert, Richard William	"	"
Godwin, Annie Gill	"	"
Gormly, Samuel James	Mt Vernon, Ia	
Grove, Claude Devlin	Gallatin	Daviess
Guenther, Eda Minnie	Rolla	Phelps
Hardin, Eva Angustia	"	"
Harper, William Joseph	Parsons, Kas	
Harris, Walter Bibb	Melbourne, Ark	
Harty, Bruce Arthur	Stoutland	Camden
Hawkins, Philip Cordell	Brumley	Miller
*Henderson, Harry Philip	St James	Phelps
Henry, David Edward	Pleasant, Ind	
Hitch, Arthur Martin	Cuba	Crawford
Hogan, Charles William	Lebanon	Laclede
Hollow, Henry Orlando	Cuba	Crawford
Hubbert, Guy	Neosho	Newton
Hughes, Richard Kingston	"	"
Iijima, Zentaro	Saitamaken, Ja	
Irick, James Albert	Competition	Laclede
Jamison, Blanche	Rolla	Phelps
Johnson, Edward Mackay	"	"
Kennedy, William Price	"	"
Kerr, William Christian	St. Louis	
Kilgore, Josephine	Rolla	Phelps
Knapp, Margaret Ann	Relfe	"
Lepper, Anna May	Rolla	"
Lepper, Jennie Edith	"	"
LeSueur, Ellen Virginia	Edgar Springs	"
Lewis, Lillian Jeanette	St Louis	
Livingston, Archibald Armstrong	Elk Prairie	Phelps
McCaw, Margaret	Rolla	"
McCracken, Lucy Ellen	"	"
McMullin, Richard Willie	Hillsboro	Jefferson
Madigan, Emma Rose	Rolla	Phelps
Madigan, Fannie Mary	"	"
Martin, Grace	Sullivan	Franklin
Meriwether, Carl	Rolla	Phelps
Millard, Linna	"	"
Millard, Sallie Elizabeth	"	"
Miller, Margaret	Crocker	Pulaski
Mitchel, Peter Reuben	Bakersfield	Ozark
Mitchell, Walter	Rolla	Phelps
Morgan, Minnie	"	"
Morris, Fanny Brown	"	"
Morris, Lola	"	"
Oatley, John Arthur	"	"
Phariss, Ida	"	"
Petraglio, Ama	"	"
Ponder, Abram Russell	Chehalis, Wash	
Ried, John Calnm	Pleasanton, Ks	
Richardson, Ethelyn Ann	Rolla	Phelps
Richardson, Grace Sarepta	"	"
Robertson, George Gordon	Cuba	Crawford
Rolufs, Rulof Theodore	Vest	Phelps
Rowe, Catherine	Rolla	"
Sappenfield, Estella Aurora	"	"
Sappenfield, Olive	"	"
Seay, Clifford Edward	Salem	Dent
Sharrar, May Dora	Rolla	Phelps
Shaw, Olive Helen	"	"
Smith, Tennie Estelle	"	"
Soest, Adele	"	"
Southgate, Margaret Barron	"	"
Spencer, Clifton Bates	Joplin	Jasper
Spencer, Herbert Galen	"	"
Stephenson, Lulu Elizabeth	Rolla	Phelps
Suppan, Leo Richard August	St. Louis	
Tallman, Blanche	Crocker	Pulaski
Thomas, William Stephens	Bevier	Macon

*Died December 10, 1892.

Name.	Postoffice.	County.
Thompson, Frederick Lewis	Rolla	Phelps
Torrence, Leslie Clay	Pocahontas	Cape Girardeau
Tyrrell, Frank Lee	Sinkin	Shannon
Vaughan, Robert Edward Lee	Salem	Dent
Via, Jessie Miller	Rolla	Phelps
Walker, Jennie	"	"
Walker, John Edward	Vichy	Maries
Watson, John Adolph	Safe	"
Weisenbach, Addie Margnerite	Rolla	Phelps
Weissgerber, Otto	Lebanon	Laclede
Wendt, Francis Engene	St. James	Phelps
Whitley, Minnie	Rolla	"
Wilkins, Elenor Matilda	"	"
Wood, Arthur Edward	"	"
Zelch, John Albert	Clayton	St. Louis

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SUMMARY.

Academic Students—	
Graduates	7
Seniors	15
Juniors	15
Sophomores	15
Freshmen	15
Preparatory	112
Specia	61
Total	277
Professional Students—	
Agr'l and Mech'l { *a*, Regular	49
Agr'l and Mech'l { *b*, Special	294
Normal { *a*, Regular	50
Normal { *b*, Teachers' course	34
Law	57
Medical	39
Engineering	64
Military Science and Tactics	180
Mining and Metallurgy	114
Total	881
Grand total	1158
Names counted more than once	444
No. of individual students	714

ENROLLMENT.

1. Academic Departments.

a. Language.	No. students.	*b Science.*	No. students.
1. English	420	1. Metaphysics	40
2. Latin	254	2. Mathematics	390
3. Greek	77	3. Physics	210
4. Modern Langnages	291	4 Chemistry	297
5. Hebrew	4	5. Geology and Mineralogy	67
6. Sanskrit	2	6. Biology	100

2. Professional Departments.

	No. students.		No. students.
1. Agriculture and Mechanic Arts.	343	5. School of Mines and Metallurgy	114
2. Normal Instruction	84	6. Engineering	64
3. Law	57	7. Military Science and Tactics	180
4. Medicine	39		

COUNTIES REPRESENTED IN THE UNIVERSITY.

Adair	1	Lincoln	7
Atchison	5	Lafayette	2
Andrew	4	Lewis	5
Audrain	17	Macon	4
Barton	1	Maries	4
Bates	5	Marion	5
Boone	201	Miller	3
Buchanan	10	Morgan	1
Benton	1	Montgomery	4
Butler	1	Moniteau	9
Cedar	1	Monroe	9
Clinton	5	Nodaway	5
Callaway	11	New Madrid	4
Cooper	7	Newton	3
Cape Girardeau	1	Osage	3
Chariton	8	Ozark	2
Caldwell	7	Putnam	2
Cass	10	Pettis	7
Carroll	7	Pike	13
Clay	2	Phelps	63
Cole	7	Platte	6
Camden	1	Pulaski	2
Crawford	5	Randolph	9
Dent	6	Ray	2
Daviess	3	Ralls	3
Dade	1	Ripley	1
Franklin	3	Schuyler	1
Gentry	3	St. Louis	3
Grundy	6	St. Louis City	11
Greene	4	St. Charles	4
Gasconade	3	Shelby	6
Henry	5	Stone	1
Howard	3	Scott	3
Holt	6	St. Clair	2
Howell	1	Ste. Genevieve	3
Harrison	3	Scotland	2
Johnson	4	Saline	15
Jackson	20	St Francois	2
Jasper	7	Vernon	8
Jefferson	7	Washington	2
Knox	4	Warren	3
Lawrence	4	Webster	1
Linn	6	Worth	3
Laclede	7	Number of counties represented	88
Livingston	5		

STATES, TERRITORIES AND FOREIGN COUNTRIES.

Arkansas	6	Missouri	683
Colorado	3	Montana	1
Illinois	5	Nebraska	1
Iowa	2	North Carolina	1
Japan	1	South Carolina	1
Kansas	4	Texas	4
Kentucky	1	Washington	1
Maryland	1	Total represented	15

Honorable Mention—1891-92.

Department of English—
MILTON ROBARDS CONLEY.

Department of Biology—
JOHN NELSON FELLOWS.

Department of Chemistry—
JOHN NELSON FELLOWS. WILLIAM MEADE SAMS.
FRANK O. RAY.

Department of Engineering—
JOHN NELSON FELLOWS.

Department of Geology and Mineralogy—
GEORGE LINCOLN BROWN. ROBERT CALDWELL.
JOHN NELSON FELLOWS.

Department of Greek—
MILTON ROBARDS CONLEY.

Department of Latin—
MILTON ROBARDS CONLEY. JAMES EDWARD GOODRICH.

Department of Law—
FRANK BLAKE. FRANK BALLARD FULKERSON.
HARRY T. HERNDON. HORACE RUARK.
OSCAR BENTON TOALSON.

Department of Mathematics—
MILTON ROBARDS CONLEY. JOHN NELSON FELLOWS.
CASSIUS JACKSON KEYSER.

Mental and Moral Philosophy—
JAMES EDWARD GOODRICH. MARY MANSFIELD.
HARRIS LANCASTER MOORE.

Department of Military Science and Tactics—
SAMUEL F. CRECELIUS. WILLIAM E. GORDON.
AUSTIN B GRIGGS. CHARLES G HAINES.
ALBERT J McCULLOCH. JOSEPH E. SMITH.
THOMAS W. THOMPSON. FRANK B. WICKHAM.

Department of Modern Languages—
GEORGE LINCOLN BROWN. MILTON ROBARDS CONLEY.
JOHN NELSON FELLOWS. CASSIUS JACKSON KEYSER.
WILLIAM MEADE SAMS. MARY MANSFIELD.

Department of Pedagogics—
MILTON ROBARDS CONLEY. JOHN NELSON FELLOWS.
SAMUEL ADAMS LYNCH.

Department of Physics—
MILTON ROBARDS CONLEY. JOHN NELSON FELLOWS.

Department of Sanskrit—
NEWTON T. ADAMS. MILTON ROBARDS CONLEY.

Department of Comparative Philology—
NEWTON T. ADAMS.

James S. Rollins Scholarships.

These scholarships have been awarded as follows:

In A. B. Course.....Jennie Adams
In Engineering.....Frank O. Ray
In Law.....Isidor Loeb
In S. B. Course.....Cora Eitzen
In Medicine.....William D. Lockwood, Richard F. Cook.
In Agriculture.....Wm. Schull Bretz

Graduates of 1892.

Academic College.

FIRST RANK WITH DISTINCTION.

Fellows, John Nelson, S. B.
Keyser, Cassius Jackson, S. B.
Conley, Milton Robards, A. B., L. B.

FIRST RANK.

Sams, William Meade, L. B.
Caldwell, Robert, S. B.
Brown, George Lincoln, S. B.
Mansfield, Mary, L. B.
Lynch, Samuel Adams, L. B.
Hart, Harry Gill, L. B.
Goodrich, James Edward, A. B.
Adams, Newton T., A. B.
Dent, Lewis Lee, L. B.

SECOND RANK.

Selsor, Mark, S. B.
Bronson, Harl Howard, A. B.
LaMotte, John H., S. B.
Denny, James Milton, S. B.
Moore, Harris Lancaster, A. B.
Hancock, Alice Virginia, L. B.

Law College (LL. B.)

Allen, James M.
Hinkle, John J.
Robinson, Omar E.
Beach, Alva W.
Locker, William H.
Rodgers, Robert D.
Blake, Frank
Manning, A. V.
Ruark, Horace C.
Bruce, George W.
Mayfield, Irwin W.
Rudy, Jules L.
Dunkin, Robert R.
Mayfield, Leander C.
Schaper, Jesse H.
Farley, Robert E.
Minton, Charles
Talbot, Demetrius W.
Fulkerson, Frank B.
Moyer, Linneus E.
Thompson, Burton M.
Hart, Harry G.
O'Mahony, Clarence
Tipton, Joseph C.
Herndon, Harry T.
Poague, Henry F.
Toalson, Oscar B.
Willis, John S.

Engineering College.

Crecelius, Samuel F., C. E.
Fellows, John N., Top'l E.
Ray, Frank O., Top'l E.

SURVEYOR'S CERTIFICATE.

Hunter, Thomas E.
Doty, Augustus H.

College of Agriculture and Mechanic Arts.

Tandy, John L. (B. Agr.)

Normal College (Pe. B.)

Adams, Newton T.
Denny, James M.
Lynch, Samuel A.
Bronson, Harl H.
Fellows, John N.
Mansfield, Mary
Bronson, George L.
Hancock, Alice V.
Moore, Harris L.
Caldwell, Robert L.
Hancock, Etta
Sams, William M.
Conley, Milton R.
LaMotte, John H.
Selsor, Mark.

CERTIFICATE.

Harris, Herman F.
Dillon, John W. S
Shull, Rena Mary
Baldwin, Carrie E.
Hoffman, Gustave A.
Gordon, Miller R.
McKinley, Gertrude
Sanderson, Sarah J.
Bear, Alfred S.
Boyer, Monta J.
Briegleb, Charles F.
Smith, Clyn.
Gwinn, Arthur
Doyle, John H.
Butcher, Laura E.
Williams, David E.
Hudgins, Warren T.
Adams, Vinnie
Lynch, Dora A.
Miller, Mary E.
Powell, Bessie
Harris, Orienne
McClement, Belle
Dawes, Hamilton M.

Military Certificate.

FIRST RANK WITH DISTINCTION.

Crecelius, S. F.	Smith, J. E.	Griggs, A. B.
McCulloch, A. J.	Thompson, T. W.	Haines, C. G.
Gordon, W. E.	Wickham, F. D.	

FIRST RANK.

Balthis, F. S.	Duncan, J. J.	Stone, Kimbrough.
Campbell, W. T.	Holman, J. H.	Taylor, T. J.
Fellows, J. N.	McBurney, H. G.	

SECOND RANK.

Allen, E. T.	Dillon, J. W, S.	Niedermeyer, F W.
Allen, J. M.	Ficklin, W. H.	Granger, O. W.
Bear, A. S.	Mitchell, H. R.	

Masters' Degrees.

Oliver, T. J , S. B. class '73, S. M.	Theilman, Robert, S. B. class '83, S. M.
Miles, George W., S. B. class '84, S. M.	Smith, James Allen, A. B. class '85, A. M.
Froley, John W., S. B. class '88, S. M.	Stumberg, Charles H., A. B. class '89, A. M.
Coleman, Nancy, A. B. class '89, A. M.	G. Ward Kemp, LL. M.

Honorary Degree (LL. D.)

John Davison Lawson, B. C. L., Professor of Law in the University of the State of Missouri.

GRADUATE COURSES.

The following courses have been arranged and are offered with primary reference to the wants of graduates of this University who aim at a Master's or Doctor's degree; but they are open to graduates of other reputable Universities and Colleges, and even to such under-graduates of exceptional ability and attainment as may profit by them.

The regulations adopted by the Faculty with respect to Master's and Doctor's degrees are as follows:

Requirements for the Master's Degree.

Applications for the Master's degree will be considered on the basis of one year's graduate study at this University, in one or more departments.

1. One year's study is understood to mean at least four courses of three hours per week throughout the scholastic year, or the full equivalent thereof.

2. All the courses may be taken in one department, and at least half must be.

3. The courses must all be of advanced character, and not open to a student below the Junior year.

4. There shall be appointed annually a Committee on Higher Degrees, before which all applications for such degrees, with the courses chosen, shall be laid before November 1 of each year, and by whom such courses may be approved or modified, and recommended to the General Faculty. This same committee shall also recommend candidates at the close of the scholastic year to the General Faculty.

Requirements for the Doctor's Degree.

The requirements for the degree of Doctor of Philosophy or of Science are:

1. That the candidate shall have received a Bachelor's degree (in Arts, Letters, Science, or Philosophy) from some reputable University or College.

2. That he shall have attained, in a current graduate study pursued at this University, a high proficiency in some one branch of learning and respectable proficiency in at least one other.

3. That he shall have submitted a dissertation evincing capacity for original research and power of independent thought.

The attainment of the doctorate is not a mere matter of fidelity nor of diligence, nor of duration of effort. No definite course can be prescribed and no period of time specified, but in general the candidate will be expected to spend three years, or if he have a Master's degree, two years, in graduate study under University direction; but with Faculty approval one of these years may in either case be spent *in absentia*.

I. Department of English.

Courses 1, 2, 4, 5, 6, presuppose some knowledge of Anglo-Saxon and German: course 3 presupposes, in addition, some knowledge of Latin and French.

Professor ALLEN:

1. Anglo-Saxon Poetry. Beowulf (Harrison and Sharp); Judith (Cook), or Cynewulf's Elene (Kent), or Caedmon's Exodus and Daniel (Hunt). Two hours a week, first and second semesters.

2. Middle English (1150-1400). Skeat's Specimens, part I; Ten Brink's Chaucer's *Sprache und Verskunst*. Two hours a week, second semester.

3. Anglo-French Element in English. Skeat's English Etymology, 2nd series; Behren's *Beitraege zur Geschichte des Franzoesischen Sprache in England*.

Professors PENN or BOWEN and WAUCHOPE:

4. Gothic. Wulfila (Balg); Braune's Grammar. Two hours a week, first and second semesters

5. Old Saxon. Heliand (Heyne). Two hours a week, second semester.

6. Anglo-Saxon Grammar, Phonology. Sievers' Grammar of Old English (Cook). Two hours a week, first or second semester.

7. Origin and Development of the English Drama. Lectures. Two hours a week, second semester.

II. Department of Latin.

The following courses presuppose the under-gradnate classical course as given in this University, or its equivalent: that is, about five or six years' study of Latin Language and Literature:

Professor JONES:

1. Critical study of a selected anthor, three times a week, both semesters.

This course will be accompanied by the presentation of papers and discussions on special topics. While it is intended chiefly for graduate students, it will be open to others of suitable preparation.

2. Historical Latin Grammar, twice a week, both semesters.

This course embraces a general survey of the syntax of the cases, moods and tenses from a historical standpoint. Some group of constructions will then be taken up and carefully studied. This course must be preceded by course 3.

3. Early Latin, twice a week, second semester. This course will embrace the study of Latin Grammar on the side of forms and inflections and must precede course 2. Allen's Remnants of Early Latin, supplemented by lectures.

4 Introduction to Latin Epigraphy and Palæography, twice a week, first semester. This course is intended to give the student practice in reading inscriptions and manuscripts in fac-similes. The basis of the work will be *Cours d'Epigraphie latine* (Cagnat).

Professor BURNAM:

5. *(a)* Lucretius (De Rerum Natura), three hours a week, both semesters with Cicero, (De Natura Deorum) as private reading. *(b)* Tacitus Annals I—VI, three hours a week, both semesters, with Suetonius' Tiberius. Nipperdey's edition is used, and therefore a reading knowledge of German is required.

6. Roman Public Law, three hours a week, both semesters. Lectures by the instructor and reading by the class of W. Warde Fowler's *City-State* (1893).

7. Roman Private Law, two hours a week first semester, and continued in the second if the class desire it. Justinian's Institutes read in the class and a full commentary supplied by the instructor, with a short sketch of the History of Roman Law. Text-book: Holland.

8. Roman Private Life, two hours a week first semester, and continued during the second at the option of the class. Text-book: Marquardt's *Roemisches Privatleben* or the French translation by V. Henry.

III. Department of Greek.

GREEK LANGUAGE AND LITERATURE.

Professor MANLY:

1. Historical Grammar of the Greek Language. Two hours a week, both semesters. Applicants for this course should have had the courses required for the A. B. degree in this University, or an equivalent.

2. Homeric Literature and Antiquities. Two hours a week, two semesters. Requirements for admission similar to those above.

ARCHÆOLOGY.

Professor PICKARD:

1. History of Greek Art. Three hours a week, both semesters.

2. Greek Epigraphy. One hour a week, both semesters.

3. Archæological Seminary. Two hours a week, two semesters.

4. History of Greek Vases and Vase-painting. One hour a week, first semester.

5. Greek Ideals of the Gods. One hour a week, second semester.

6. History of Etruscan and Græco-Roman Art. Two hours a week, second semester. The first semester of course 1 is a prerequisite to this course.

In course 2 only is a knowledge of the Greek language required, but it is extremely valuable in all of them.

IV. Department of Modern Languages.

The courses below presuppose that the work as outlined in the University catalogue has been done.

Professor BLACKWELL or HOFFMAN:

1. Middle High German; the Grammar (Paul); the Nibelungenlied.

Lectures on Old High German language and literature, and Comparative Teutonic Philology. Two hours a week, first and second semesters.

Professor BLACKWELL or HOFFMAN:

2. Old French (Bartsch); Provencal (Kitchin). Two hours a week, first and second semesters.

Professor WIENER:

3. Russian. Studies in Gogol and Nikrassof. Once a week, first and second semesters.

Professor BLACKWELL:

4. Italian. Dante's Inferno; lectures on the revival of learning in the Middle Ages in Italy. Once a week, first and second semesters.

Professor WIENER:

5. Spanish. Studies in the Cancioneros, in Catalan, and the History of the Literature. Once a week, two semesters.

V. Department of Semitic Languages.

Professor BLACKWELL:

1. Hebrew: Pirke Abhoth (Taylor); the Midrashim (Stark). Twice a week, two semesters.

2. Arabic: The Quran (Bagster), Noeldeke's Geschichte. Twice a week, two semesters.

3. Aramaic, Western (Syriac) and Eastern (Chaldee), Nestle's and Brown's texts. Two hours a week, two semesters.

VI. Department of Mathematics and Astronomy.

The following courses presuppose about three years of collegiate study in Solid Geometry, Trigonometry, Advanced Algebra, Co-ordinate Geometry, Determinants, and Infinitesimal Calculus.

Professor SMITH:

1, 2. Differential Equations. Four times weekly, both semesters.
Forsyth's Treatise on Differential Equations.

3, 4. Elliptic Functions. Four times weekly, both semesters. Halphen's *Traite*, Vol. I, supplemented from Briot and Bouquet's *Theorie*, etc.

5, 6. Elliptic Functions. Four times weekly, both semesters. Halphen's *Traite*, etc., Vol. II. A continuation of courses 3, 4.

7, 8. Mathematical Seminary. Twice weekly, both semesters. For orientation in various disciplines and for incitement to original research. The subjects treated in 1892-93 were Probability (Czuber) and Higher Spaces (Killing).

Professor TINDALL:

9, 10. Infinitesimal Calculus. Six times weekly, both semesters. Greenhill's Calculus, 2d Edition.

11, 12. Theory of Equations and Quantics. Thrice weekly, both semesters. Burnside and Panton's Theory of Equations.

13, 14. Theory of Substitutions. Twice weekly, both semesters. Cole's Netto's Treatise on the subject. A continuation of courses 11, 12.

15, 16. Solid Analytic Geometry. Thrice weekly, both semesters. Frost's Treatise on the subject.

Professor UPDEGRAFF:

A course in General Astronomy, as Young's, is presupposed.

17, 18. Practical Astronomy, including orbit determination. Four times weekly, both semesters. Chauvenet's Spherical and Practical Astronomy and Watson's Theoretical Astronomy.

19, 20. Spectrum Analysis as applied to the heavenly bodies. Four times weekly, both semesters. Schellen's Spectrum Analysis, Scheiner's *Spectral-Analyse der Gestirne*. All of the foregoing courses were given in 1892-93 except 5, 6, 13, 14, now offered for the first time, and 19, 20, which were given in 1891-92. Instead of 5,6 (Applications of Elliptic Functions), there may be given, according to demand, like courses in Higher Plane Curves, based on Salmon's work.

Courses 9, 10, 11, 12 are under-graduate, but may be taken with advantage by most graduates.

VII. Department of Chemistry.

The following courses presuppose all the prescribed work in the Science course in this University—that is, they presume in the candidate a good knowledge of general Chemistry, practice in Qualitative and also Quantitative Analysis, and a fair acquaintance with Chemical Theory:

Professor SCHWEITZER:

First Semester:

1. Solutions; 3 hours a week. Ostwald, Lehrbuch.
2. Exercises in Mineral Analysis; 10 hours a week.
2. Exercises in the use of the Spectroscope, Spectro-photometer and Polaristrohrometer; 2 hours a week.

Second Semester:

1. Problems in Agricultural Chemistry; 3 hours a week.
2. Study of Analytic Methods, including those of foods and feeding stuffs; 8 hours a week.
3. Sanitary investigation of air, food, water; 4 hours a week.

It is expected that 1, 2 and 3 be taken together, both courses being intended to fit young men for the active duties of laboratory instruction, as well as for the practice of the art of analytical chemistry.

VIII. Department of Physics.

There is presupposed such training in Physics as is given in the Scientific and Engineering courses in this University, or its equivalent.

Professors LIPSCOMB and SHRADER:

1. Mathematical Theory of Electricity and Magnetism. Three times weekly, first semester.

3. Thermometry and Calorimetry, Laboratory. Three times weekly, first semester.

5. A course in Dr. Hertz's Researches on Electrical Oscillatory Induction. Twice weekly, first semester.

2 Absolute Measurements in Electricity and Magnetism (Gray.) Three times weekly, second semester.

4. Thermodynamics (Wood.) Four times weekly, second semester.

6. Advanced Laboratory course in Mechanics, Sound, Heat, Spectum Analysis and Electricity. Three times weekly, second semester.

IX. Department of Geology.

Professor CLENDENIN:

1. Petrographic research with laboratory work and theses. Original investigation. Two hours weekly, first semester.

Professor BROADHEAD:

2. Palaeontology. This is a continuation of the under-graduate Palaeontologic work, and its aim is to make practical Palaeontologists. Includes field work, laboratory, drawing of fossils and theses. Two hours a week, first semester.

Professor CLENDENIN:

3. Optical crystallography and determination of Minerals. Lectures, laboratory and goniometric work. Drawing of crystals.

Geological conference with reports, theses, discussion of geologic problems, original investigations and field work. Three hours a week, second semester.

Professor BROADHEAD:

4. Studies in the Geology of Missouri, laboratory and field work. Both semesters.

X. Department of Biology.

The following advanced courses presuppose a knowledge of the usual under-graduate work in Botany and Zoology, Anatomy and Physiology, and the Elements of Histology.

Professor PURINTON:

1. General Biology; Lectures on Vegetable Histology; Physiological and Structural Botany; Comparative Anatomy of the Vertebrates, and Animal Histology.

2. The second year's work for students who have taken (1) is more advanced in character, and includes a critical study of Economic and Cryptogamic Botany, Embryology, Dissections of Vertebrates and Invertebrates, and preparation of permanent specimens for the museum and herbarium, and the preparation of theses.

3 For students who have had considerable under-graduate work in Biology, and who are candidates for the degree of Doctor of Philosophy, two years of advanced graduate work are offered, the exact nature of which may vary from year to year with the special requirements of the case, embracing much reading and original research, and necessitating the preparation of frequent dissertations or theses on the part of the student, descriptive of his own research.

The last year's work must be continuous and original, and may form the basis of the graduating thesis of the student.

Constant reference is made to the leading authors on Biologic Science. The student will often be required to read an author, and to experimentally follow his researches, reproducing and verifying his results as far as practicable.

4. Special direction will be given to the study of Biology in its application to Medicine in case of those desiring to devote themselves to medical pursuits.

XI. Department of Law.

This course is open to graduates of the two years' course in the Law department of this University and to graduates of other Law schools who have completed a similar or equivalent course. It extends through one Academic year. Such as pass the prescribed examinations upon it will receive the degree of LL. M. (Master of Laws).

Professor MARTIN:

1. Constitutional Law.
2. Law of Trusts.
3. Law of Patents and Copyrights.

Professor LAWSON:

4. Law of Insurance.
5. Law of Homicide.

Professor YANTIS:

6. Law of Corporations.

Professor HICKS:

7. Theory of Jurisprudence.

XII. Normal Department.

The following courses are offered:

Professor BLANTON:

1. First Semester, Junior Year: History of Education. Lectures and Recitations. Texts: Compayre's History of Pedagogy, Quick's Educational Reformers.

2. Second Semester, Junior Year: Theoretical and Critical. A consideration of the philosophic basis of education. Lectures and Recitations. Texts: Compayre's Lectures on Pedagogy, Rosmini's Method in Education.

3. First Semester, Senior Year: Philosophy of Education. Text: Roseukrantz's Philosophy of Education, with an examination of Herbart's System.

4. Second Semester, Senior Year: Application of the preceding principles to the various phases of actual instruction and school management. Lectures and Recitations. Texts: Compayre's Lectures on Teaching, Page on Teaching.

5. First Semester, Junior Year: School Systems of Europe. Lectures and Recitations. Texts: Gill's Systems of Education; Klemm's European Schools.

6. Second Semester, Junior Year: Philosophy of the Kindergarten. Lectures and Recitations. An examination of Froebel's "Education of Man" will be made by the class.

7. First Semester, Senior Year. A thorough examination of Herbert Spencer's Educational Theories.

8. Second Semester, Senior Year: A comparative study of the school systems of the cities and states of the United States. "Boone's Education in the United States" will be read, and many of the circulars of information issued by the Bureau of Education will be available in pursuing this investigation. Two hours a week in Junior; three hours a week in Senior.

The foregoing courses, offered to Junior and Senior under-graduates in this University, are open and recommended to graduates of Colleges and Universities in which less provision is made for discipline in Pedagogics.

XIII. Department of Electrical Engineering.

Courses 1 and 2 presuppose a knowledge of Thompson's Dynamo—electric Machinery. Courses 3 and 4 presuppose a knowledge of the Differential and the Integral Calculus.

Professor SHRADER:

1. The Electric Motor and its Applications. Three times per week, first semester. The course will cover the development of the practical electric motor up to the present time.

2. The Electric Railway. Three times a week, first semester. A study in detail of motors, their peculiarities and their present use in the electric railway.

3. The Alternate Current Transformer. Text: Fleming's Alternate Current Transformer. Three times a week, both semesters. A study of the principles that underlie the operations and use of the alternate current transformer.

4. Advanced Laboratory Work. Text: Mascart and Joubert's Electricity and Magnetism, Volume II. Three times a week, second semester. Electrical testing of all kinds.

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